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Volume IV

SOCIAL SECTOR DEVELOPMENT

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Pakistan Institute of Development Economics

Edited by Nadeem Ul Haque and Faheem Jehangir Khan

RASTA: LOCAL RESEARCH, LOCAL SOLUTIONS

SOCIAL SECTOR DEVELOPMENT
(VOLUME IV)

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Research for Social Transformation & Advancement
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PART I
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IMPROVING THE PUBLIC SECTOR DEVELOPMENT PROGRAMME ALLOCATIONS IN THE CLIENTELISTIC ENVIRONMENT OF BALOCHISTAN: A POLITICAL ECONOMY ANALYSIS

Mir Sadaat Baloch and Nadir Khan

ABSTRACT

Successive governments in Balochistan have failed to streamline the Public Sector Development Programme (PSDP) despite repeated directions from the High Court and Supreme Court to plan it effectively. This study discusses how political clientelism influences the process of PSDP by diverting scarce resources to create incentives for powerful political actors to keep the public dependent and poor. As a result, it feeds extreme levels of exploitation and corruption in Balochistan. An analysis of the disbursement of PSDP in the 10 districts in the last ten years clearly shows that some districts with more population and area receive fewer funds as compared to less populated and smaller districts. To uncover this inefficiency, this paper formulates a mathematical model that estimates the amount to be allocated to each district, where the amount to be allocated to each district is a function of total PSDP, the weights of the population, and the area of that district. Then to further prioritise the projects of any department a performance matrix is developed. The matrix ranks the public sector development projects. The criteria used in the matrix are the themes obtained from the interviews and focus group discussions with the personnel of relevant departments. This study suggests that a single approach to budgeting would make it difficult for the government. The government must use a formulaic approach along with a participatory approach for effective PSDP allocation in the clientelistic environment of Balochistan.

1. INTRODUCTION

This paper is about the Public Sector Development Programme (PSDP) in Balochistan. The province has always been on the development agenda of every political party, but, sadly, we have not witnessed any meaningful development in the region. The growth rate of the region is the lowest in Pakistan. After the 7th NFC award and the 18th Amendment in 2010, the people of Balochistan anticipated an era of sustainable development, but this fiscal autonomy has proved to be a zero-sum equation. The PSDP is considered a key component in improving the socio-economic outlook of an area. However, successive governments have failed to streamline it despite repeated directions from the High Court and the Supreme Court to plan it effectively. During 2017 and 2018 no new development projects were undertaken as the matter was sub judice. Even in the following years, the PSDP was challenged in the Balochistan High Court and the Supreme Court of Pakistan as the opposition claimed that the allocative efficiency and distributive justice were very low. Finally, the opposition, with the help of the ruling party, changed the incumbent Chief Minister of Balochistan as he was not addressing their clientelistic demands. The province is experiencing a clientelistic environment that is affecting the overall development of the area. This paper discusses how effective PSDP allocations can be done in a clientelistic environment.

Keeping in view the events of the last five years, it is imperative to find ways to improve the process of PSDP allocations. For this study, resource allocation means the projects allocated in the PSDP to different departments and districts. In this paper wherever resource allocation is mentioned it means the PSDP allocations, which is the case in the relevant literature as well. Ideally, the PSDP allocation should be based on a prioritisation exercise keeping in view the challenges in the province. However, in Balochistan political clientelism plays a major role. Financial allocations are mostly done based on what could be best described as an incremental approach: a certain fraction is added to the department's previous year's allocation every year without a rigorous investigation of the departmental needs and impact of previous allocations. Based on these issues the research has devised the following aim and objectives.

Scope

The main focus of the current study is to formulate a mathematical model and develop a matrix for only four departments, namely health, education, social welfare, and communication and works in the province of Balochistan.

Rationale

To suggest better methods and tools for the improvement of PSPD allocations in Balochistan.

Objectives

- To understand the influence of political clientelism on the process of PSDP allocations in Balochistan.
- To suggest more effective ways for resource allocation.
- To discuss policy inputs for improvement of PSDP allocations.

Based on the rationale and objectives, we answer the following three questions based on the findings:

- How political clientelism influences the process of PSDP allocations in Balochistan?
- How effective resource allocation can be performed in Balochistan?
- What are policy inputs for the improvement of PSDP allocations in Balochistan?

Before discussing the literature related to resource allocation, we examine the current system of development budget allocations in Balochistan below.

2. LITERATURE REVIEW

Development budget allocation system in Balochistan

Budget allocation in Pakistan is based on budgetary demand, which covers both the development and the non-development sides. On the other hand, the current mechanism used in Balochistan for development budget allocations can be best described as incremental (Green et al., 2000). Franklin & Ebdon (2020) and O'Hagan et al. (2020), claim that, in theory, development budget allocation should be done with the involvement of focal persons, which are district officers at the grassroots level in the case of Balochistan. However, contrary to what is argued by Panday & Chowdhury (2020) and Williams et al (2019), in Balochistan, a centralised approach is used as most of the decisions are taken by the provincial capital, Quetta. Mostly, departments do allocations without the involvement of key stakeholders, such as the general public or the private sector (Escobar, 2018). Furthermore, any changes such as the addition/deletion of resources are done based on political clientelism. This implies that there is no specific plan or policy for development budget allocation in Balochistan as suggested in theory (Dias & Julio, 2018; Franklin, Krane & Ebdon, 2013; Glodfrank, 2012).

There are other weaknesses in the process as well. For example, we can hardly witness any productive debates being conducted for budget allocations (Head, 2007). The majority of budget meetings are rushed, and their sessions are not long enough to ensure that the process is as inclusive and successful as it should be (Bostan et al, 2021; Jobaid & Khan, 2018: Jackobsen et al, 2016). Finally, a budget document is presented to the assembly for approval without any discussion by the members. Hence, as argued by McGuire et al (2020), the development budget allocation turns out to be a mismatch between the people's needs, the required facility, and allocated resources. There is a huge gap between what certain districts actually need and what they get. To propose how PSDP allocations can be improved, we need to understand how this process is conducted in different countries. In the following sections, we discuss the relationship between public expenditure and resource allocation and how it is influenced by political clientelism, which is followed by an argument about why we need resource allocation models and different models that countries are using during budgeting and resource allocation.

Public Expenditure and Resource Allocation

Public expenditure efficiency has been a debatable issue for both academics and non-academics (Khan & Murova, 2015) because public expenditure makes a huge percentage of domestic output and it has a direct influence on public policy making whether it is education, social welfare, public safety, health care, or any relevant social issue (Khan & Murova, 2015). Albassam (2020) argues that to bring efficiency to public expenditure, budget allocations play a vital role in the development and prosperity of an area. Therefore, dealing with public expenditure in terms of resource allocation remains the hardest job, particularly, in developing countries. In developing nations, it also has a significant role in the monetary development and the prosperity of people. There has been a lot of debate on resource allocation because the money involved in the process is the taxpayer's money and governments are answerable to them at least in the case of developed countries. In addition, local governments in some countries have limited resources and they need to utilise these resources to the maximum. Most importantly, the services offered by local government have strategic importance as the reason for providing the services is to bring efficiency and growth.

Further analysis of the importance of resource allocation during capital expenditure shows that there is a positive relationship between capital expenditure and growth rate. However, some researchers have argued that there is no association between the two. Thus, numerous studies have resulted in mixed results about the efficiency of capital expenditure, which makes the issue more complicated. For example, an empirical study conducted by Landau (1983), in ninety-six countries, concluded a negative relationship between government expenditure and gross domestic product (GDP). However, Albassam (2020) argued that public budget allocation plays a significant role in economic growth and the well-being of the public through the programs that provide different services, such as health and education. The paper further argued that financial regulations mainly focus on expenditures rather than on revenues making the process more complex due to peoples' dynamic demands. Therefore, scholars and policymakers are in search of effective models, that can help the decision-makers in the allocation of resources wisely and effectively. Another major factor in resource allocation, particularly in developing

countries, is the clientelistic environment caused by political clientelism.

Political Clientelism

Like most social concepts, there is a lack of consensus about the concept of clientelism. Few researchers have conceptualised it as a citizen–politician linkage that is commonly based on direct material exchange to small groups or individuals that are eager to sell their vote for the right price (Stokes, 2007). While another group of scholars has explained it as an alliance between two entities of unequal power, status, or resources, where both parties reckon it beneficial to have such a relationship (Hicken, 2011). Another school of thought has conceptualised this exchange as a way to tie the client to the patron not via a rule of mutuality but by promoting a concern that the chain of benefit will break off if they do not act as per the wishes of their masters (Kitschelt & Wilkinson, 2007). While exploring different definitions of clientelism, Hicken (2011) highlighted the following significant fundamentals of this relationship: contingency, dyadic relationships, iteration, and hierarchy.

Stokes (2007), while further examining the concept, argued that in clientelism the more powerful political actor does not need to take public office. Even without a public office, he would still be considered credible enough to promise his voters access to public resources. The powerful political actors reinforce their influence by giving their supporters traditional favours that create a sense of obligation that the favour must be reciprocated when demanded. Access and control over state resources are vital for clientelism.

Clientelism and State Resources

Political clientelism, especially in developing nations, can affect resource allocation of state-related projects such as subsidised health care, pension or unemployment benefits, community infrastructure funds, or government jobs (Hicken, 2011). Political actors in such nations very effectively reward their followers with resources, while others remain excluded. Berenschot & Aspinall (2020) claimed that while doing so, politicians find ways to bypass, manipulate or abolish, official procedures of resource distribution. They replace the prescribed standards for selecting recipients of government projects with their own political standards such as party loyalty. Apart from powerful political actors in the case of some developing countries high degree of discretionary control over the state resources is exercised by their bureaucrats as well (Cruz & Keefer, 2015). They hold autonomous power, making them powerful actors in resource allocation. This control over state resources ultimately influences the development of a nation.

Why Clientelism is Bad for the Development of a Nation?

One of the most prominent debates in clientelism literature is on the association of clientelism with development. Researchers assert that clientelism is predominant in developing countries (Brusco et al. 2004). The contemporary conception of the connection between clientelism and economic development is that it is not deterministic but probabilistic. Although the empirical association between development and clientelism is fairly robust (Kitschelt & Wilkinson 2007, Bustikova & Corduneanu-Huci 2011, Berenschot, 2018), there are a variety of views about the causal mechanisms at work.

Hicken (2011) claimed that clientelism hampers economic development by diverting scarce resources to create incentives for powerful political actors to keep the general public dependent and poor. As a result, it feeds on extreme levels of exploitation and corruption, ultimately creating a trust deficit in the public who become sceptical of democratic foundations. There is a consensus among the researchers that it has immense negative repercussions on the functions of democracy, especially on the capability of the administration to deliver necessary public policies (Gherghina & Nemčok, 2021). Apart from this, clientelism tends to change the basic accountability connection and hinders sustainable development in a region (Bustikova & Corduneanu-Huci, 2011). Clientelism not only slows down the development of a country but also stagnates political institutions. The politicisation of the bureaucracy is also associated with clientelism. It obstructs the system and creates governance issues for administration (Keefer 2007, Cruz & Keefer 2015). The clientelist approach is bad for transparency as it discourages information sharing and collaboration (Keefer 2007).

There are several studies that claim a relationship between the size of the public sector and clientelism, whether calculated in terms of wage bills, development funds, or jobs (Grzymala-Busse 2008). It is attributed as one of the main factors for public sector inefficiencies and larger public deficits. Researchers claim a major variance in the types of goods and services offered in programmatic systems versus clientelist systems (Gherghina & Nemčok, 2021). In the latter arrangement, services and goods to the general public are underprovided, while in some specific constituencies such goods and services are provided in abundance. The debate is still evolving and much needs to be done to determine a structure linking clientelism with development. Instead of just testing the hypothesis that development is negatively related to clientelism, researchers should try to come up with other testable propositions as well. The research on clientelism is not restricted to the national level, there is a school of thought that debates its influences on institutions.

Institutional Effects of Clientelism

The impact of clientelism on institutions is still not explored widely as most of the research has focused on offices of political parties. For example, Desposato (2007) argued that political offices that practise clientelist strategies act in a different way than the parties that mobilise electoral support by providing public goods. Such political parties are more focused on consolidating public resources and supplying them through their private links. Political parties that bank on clientelism have less cohesion compared to parties that do not use this strategy. Stokes (2007) argued that political clientelism not only hampers economic development but also weakens the democratic system and allows pressure groups to consolidate more power. It discourages administrations from offering services and goods to the public as it serves the interests of politicians that thrive on poverty and depend on voters (Berenschot & Aspinall, 2020). Clientelism weakens the democratic system by allowing selected voters to use their votes to convey preferences, while others only vote for an exchange of minor payment or good (Desposato, 2007). The influence of clientelism on development and institutions ultimately leads to a poor nation.

How Clientelism Causes Poverty?

If we examine the conception of clientelism, the majority point toward the poverty of the client, especially in the context of poor countries (Hicken, 2011). It is pertinent to mention that most of these surveys are qualitative and lack quantitative cross-national studies. Despite that, if we analyse the qualitative literature, it can be concluded that clientelism is more prevalent in the developing world (Hicken, 2011). These studies have theorised two distinct justifications for the linkage between poverty and clientelism. The dominant explanation highlights that poor people value a handout more compared to rich people. Hence, if a politician wishes to hand out bonuses, they will target the poor. On the other hand, the second justification claims that compared to rich people, poor people are more risk averse so they value a bonus in hand today rather than the guarantee of a progressive public policy in the future. As Kitschelt (2000) explains, "poor and uneducated citizens discount the future, rely on short causal chains, and prize instant advantages such that the appeal of direct, clientelist exchanges always trumps that of indirect, programmatic linkages promising uncertain and distant rewards to voters" (p. 857).

However, another school of thought argues that it is not poverty that generates clientelism, but it is the other way around, i.e, clientelism generates poverty (Robinson & Verdier, 2013). Scholars explain that to stay in power powerful political actors can develop a strategy to hold back income growth and social mobility. While further discussing their case, some present the example of the Christian Democratic Party in Italy which kept their voters impoverished and dependent on the party. In other developing countries, political parties discourage the delivery of development-enhancing public goods and prefer the provision of personal favours (Robinson & Verdier 2013) resulting in a decline in the productivity of the country while increasing the dependence of people on favours from politicians (Medina & Stokes 2007). One may argue that both premises can be true; clientelism can cause poverty and poverty can also cause clientelism. However, if resources are allocated in better ways, clientelism can be overcome. This raises the question of how resource allocation can be done more effectively.

How Resource Allocation Can be Done More Effectively

It can be argued that efficient budget allocations are the key to sustainable development. However, efficient

budget allocations are not as simple as it sounds since in practice managers or administrators can face many challenges. In the case of developing countries, the issue is compounded (Albassam, 2020) due to political clientelism as discussed earlier. Albassam (2020) asserted that having a resource allocation model for better allocation of government resources helps governments to achieve sustainable development, particularly in the case of underdeveloped nations. Ebdon and Franklin (2006) further argue that public policy implementation can be more effective if resource allocation is done efficiently with the help of different models and tools, such as involving the public or developing a resource allocation model.

Michael Lipton believes the reason for low growth in developing countries is the unequal and unfair allocation of resources between rural and urban areas (Lipton, 1977). Sechele (2016) further argued that as much of the allocation is done in urban sectors, developing nations cannot achieve sustainable development. However, Lipton failed to explore the role of ideological orientations, such as clientelism, due to which urban biases can differ among countries (Sechele, 2016). Thus, despite the amount of money the government spends in developing countries, there still is a question mark on their growth because of the clientelist approach (Khan & Murova, 2015). Talukdar (2020), while further exploring the issue, identified other factors that influence the budgeting process, such as political affiliation, previous years' budget, the leadership's education and ability, the priority of local demands, personal traits of a leader, government rules and regulations, collaboration, and scarcity of resources. All these issues can be accounted for if an efficient model is developed based on the political, financial, and social environment of Balochistan. In the following, we discuss the most common resource allocation methods that are being used across the globe to ascertain better ways for resource allocation in Balochistan.

Most Common Resource Allocation Methods

In today's world, there are many budgeting techniques that different governments and organisations use. However, here we will discuss the most common allocation methods.

Incremental Budgeting

An American political scientist Charles E. Lindblom in an essay in 1959, titled "The Science of Muddling Through", presented the concept of 'incrementalism' that helped the policymakers to look for the middle way between 'bounded rationality' and the 'rational actor model' to ease the process of resource allocation (Talukdar, 2020). In incremental budgeting, an organisation may utilise a gradual way to deal with planning when they basically increase or takes away from the earlier expenditures (Talukdar, 2020). Therefore, incremental budgeting takes last year's real estimates and increases or deducts a fraction to achieve the current year's targets. Since it is straightforward, it is the most widely used tool in developing nations. If the key cost drivers do not change from year to year, incremental budgeting is sufficient. However, to address the changing needs of the public, need-based allocation is a better option.

Need-based resource allocation

Today countries focus more on getting information about the needs of the people to allocate resources, and the main method of resource allocation has been to look for variables that explain the needs of the community and later assign them weights for resource allocation (Ensor et al., 2012). Formulas rely on the precision of the proxies and weights used which may seem subjective at times (Ensor et al., 2012). According to a study conducted in Canada, the selection of variables used to proxy needs can have an effective impact on the final allocations (Bedard et al., 2000). Bedard et al., (2000) claimed that need-based capitation models have been proposed as a possible alternative to funding approaches based on incrementalism such as in Balochistan. This model allocates money to regions or services based on the population's age and gender distribution, as well as other needs. In addition, the decisions related to politics are also taken on the fact that how fast they can address people's issues. Explaining it with example in the health sector, the weighted formula covers the community and hospital health services, prescription, and primary medical services. Then for each area weighted population is estimated on each of the above three components. Subsequently, these weighted populations are consolidated into a single weighted population in each area, which later is converted into the monetary target.

While conducting a study on spatial distribution in Bangladesh, Jobaid & Khan (2018) asserted that at the time of the development of the budget or resource allocation, spatial distribution should be considered. Most importantly they believe that the allocation should be made without any bias and influence because these influences and biases would turn some districts stronger and others weaker. Furthermore, governments should include each district's local government body to know their needs and responsibilities. Also, governments should adopt a bottom-up approach to understand the real development needs of departments. Finally, proper monitoring of projects should be done along with an assessment of the utilisation of money that is allocated to these projects.

Three major arguments for using a formulaic approach to developing local budgets are performance, political goals, and fairness (McGuire et al., 2020). The efficiency in this context means that national money is spent as per policies developed for the prudent use of resources. Equity states that justice can be provided equally, and every political party has a certain commitment and set promises with its community in terms of addressing its needs. Some developing countries have tried to shift away from historical resource allocation toward resource distribution based on metrics that try to capture variance in need (McGuire et al., 2020). Anselmi et al. (2015) presented eight resource allocation studies (six in Africa) that used population weighting based on demographic, socioeconomic, and health status characteristics, including mortality, as common components of the allocation formula.

While need-based allocation is still popular in many countries, there are governments that prefer more democratic ways of resource allocation. Contemplating the dynamics of the political environment, scholars have designed a more democratic needs-based allocation method called 'participatory budget allocation'.

Participatory budget allocation

Participatory budget (PB) allocation is one of the most used allocation methods. PB originated in Brazil in the 1980s. It considers the opinion of the public and key stakeholders while allocating resources, and public budgeting affects the government's decisions related to infrastructure and other development projects (Franklin & Ebdon, 2020). While arguing in favour of PB, Jackobsen et al. (2016) claimed that it fosters transparency, promotes good governance and social justice by taking into consideration marginalised groups, and helps in making good citizens.

Williams, St Denny & Bristow (2019) presented evidence from the United Kingdom on participatory budgeting claiming that budget decisions are getting progressively difficult, especially during times of reduced public sector budget and austerity as the masses assume or demand more public services. During such times, the public also put minimal trust in a political process as they feel they have limited engagement in any political decision.

The proponents of participatory budgeting assert that during such times we can gain public trust by involving them in the process. Each government can decide the level of public participation depending on its promise to the masses during elections (Rowe & Frewer, 2005). They may only inform them through objective and balanced information or can obtain their feedback about alternative opportunities and solutions. On the other hand, the public can be involved throughout the process to understand their concerns and aspirations in a better way. Moving forward, the public and government can work in a partnership and decide the course of action through joint decision-making. Finally, in a rare scenario, the public is empowered by taking the final decisions. Usually, governments work between the two extremes, depending on the situation, i.e., either the public is consulted through feedback, or they are given a joint role in decision-making (Head, 2007). Escobar and Elstub (2017) argue that apart from these levels of participation, we can also use innovative ways such as consensus conferences, planning cells, deliberative polls, citizen assemblies, and citizen juries to engage the public at a micro level that can also facilitate deliberation and participation. They coined the concept of 'mini public' for such engagement. Mini publics are randomly nominated residents based on the principle that stakeholders affected by the issue have an equal chance of being selected to ensure the legitimacy of the process (Escobar and Elstub, 2017).

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In recent times there have been more than 7,000 such cases that have used participatory budgeting (Dias & Julio, 2018). Additionally, well-reputed international organisations, such as the United Nations and the World Bank recommend the practice of participatory budgeting particularly in developing countries (Goldfrank, 2012). Therefore, during the 1990s, many Asian countries, including India, Bangladesh, Sri Lanka, and Nepal, were engaged in participatory planning and budgeting and many other countries are even adopting it currently (Panday & Chowdhury, 2020).

Multi-Criteria Decision Analysis for Effective Resource Allocation in Balochistan

Apart from the resource allocation model, the present study also aims to create a decision matrix that can help the decision maker to select the best project for each department. The following section discusses one such criterion for resource allocation.

Kurth et al (2017) claimed that public administration has to make complex decisions that must create a balance among technical, economic, and political considerations. They have to face pressure from multiple concerns to ensure transparent techniques for decision-making (Esmail and Geneletti, 2018). For governments, efficient administration means the prioritisation of scarce resources reasonably and transparently. Hence, decisions about resource allocation must involve all the stakeholders (Kurth et al, 2017). Dodgson et al (2009) while discussing this further asserted that for decision-making in government projects the popular form of analysis is cost-effectiveness analysis (CEA). This tool equates the costs of different project alternatives that provide similar kinds of output. Another less popular tool, called cost-benefit analysis (CBA), also considers some essential goods or services that are economically insignificant in monetary terms (Gamper and Turcanu, 2007). Both CEA and CBA are systematic tools of comparison that give monetary values to the decision maker to rank or prioritise projects (Gamper and Turcanu, 2007). However, this research is focused on methods of comparing impacts in ways that do not involve assigning explicit monetary values to all of them.

Multi-criteria analysis (MCA) is supposed to overcome the deficiencies of old decision-support techniques such as cost-effectiveness analysis (CEA) or cost-benefit analysis (CBA) (Müller et al, 2020). Müller et al, (2020) asserted that MCA can deal with qualitative measures and uncertainties related to the future impacts of a project. This tool is favoured by the government organisations that have used it in recent times (Melville-Shreeve, Ward & Butler, 2016). Although previously used models such as CEA or CBA do provide a decision-making framework, the MCA enables the use of quantitative as well as qualitative measurement scales (Nedeljković et al, 2021). For this reason, the tool is more suitable to address multidisciplinary problems such as resource allocation. Gamper et al. (2006) argued that MCA is an ideal method if the government needs to find consensual resolutions to overcome conflicts.

The MCA banks on the ruling of the decision-making team, while setting objectives and criteria approximating comparative vital weights (Reddy, Thokala & Duenas, 2017). However, for researchers, the subjectivity of MCA is a matter of concern because choices of objectives, criteria, weights, and assessments are based on the choices of

decision-makers for achieving the objectives (Gamper and Turcanu, 2007). Stirling (2006) claimed that this subjectivity can be tackled by using 'objective' data that can be measurable, such as observed prices, population, or any other index. He further claimed that despite its subjectivity the MCA can bring a degree of objectivity, scrutiny, and honesty to the process of decision-making that lies beyond the practical reach of CBA.

The present study uses a more informed and objective form of the MCA known as multi-criteria decision analysis (MCDA). This tool was created to provide an ordering for the option used in the criteria, from the least preferred to the most preferred option (Dodgson et al, 2009). The options used differ in their impact on the objectives set by the government, and secondly, no one option can be best in achieving objectives (Dodgson et al, 2009).

Kurth et al. (2017) claimed that the MCDA is a better way to examine complex problems that involve a variety of non-monetary and monetary objectives. It helps in analysing the problem in light of realistic information that allows data and judgements to be more objective. The main aim of this technique is to help in decision-making, but not to take the decision (Kurth et al, 2017). This tool offers diverse ways of examining a multifaceted issue by gauging the impacts of options on set objectives (Adem et. al, 2018). They further discussed that multi-criteria decision analysis can be used either to assess things that are only proposed or to appraise things to which resources have previously been allocated. The MCDA can also help public organisations in decision justification and checks (Dodgson et al, 2009). The formation of the MCDA for this study is further discussed in the methodology part of this paper.

3. RESEARCH METHODOLOGY

In this section, the procedure adopted to analyse the development budget allocation in Balochistan is discussed. For this purpose, secondary data was obtained from the provincial planning and development, education, health, social welfare, communication & works, and finance departments. The data set was composed of data related to PSDP projects in Balochistan from 2011 to 2021. Statistical analysis was performed using frequency distributions to understand the dimensions and distribution of the development budget.

The sample for the study was 10 districts of Balochistan selected using the multiple poverty index (MPI). Four departments, namely education, health, social welfare, and communication & works development projects were analysed to find out inequalities in resource allocation. Table 1 shows the top 5 districts having the lowest MPI values and the bottom 5 districts having the highest MPI values.

Table 1: Sample of the study

Top 5 Districts		
S. No.	*District*	*MPI*
1.	Quetta	0.213
2.	Kalat	0.275
3.	Khuzdar	0.285
4.	Gwadar	0.293
5.	Mastung	0.302
Bottom 5 Districts		
S. No.	*District*	*MPI*

1.	Killa Abdullah	0.641
2.	Harnai	0.633
3.	Barkhan	0.627
4.	Ziarat	0.575
5.	Chagai	0.546

Source: Multidimensional Poverty in Pakistan 2014-15

The table shows that Quetta has the lowest MPI depicting low poverty and Killa Abdullah has the highest MPI depicting the highest poverty among the districts of Balochistan.

Mathematical Model

Furthermore, the model was developed by using population and area as the constructs for the allocation of development funds. The weights for population and area were estimated and incorporated into the following model to calculate the estimated funds for each district:

$$R_i = P_T \; x \; (W_{Pi} + W_{Ai}) \qquad \text{----------------- (1)}$$

Equation 1 shows the allocation of resources to a particular district. The allocated resources of a district are a function of its population and area and the total PSDP. After estimating the funds for each district, the allocation of funds to each department was calculated by using the following method:

$$R_{Dj} = R_j \; x \; \frac{\sum R_j}{years} \qquad \text{------------- (2) --}$$

Equation 2 shows that the resources to be allocated to each department are a function of the weighted average of the resources allocated previously and the resources allocated to the district.

The MCDA Performance Matrix

The matrix for this study was based on the Multi-Criteria Decision Analysis (Dodgson et al, 2009). In the MCDA, the preferences of the stakeholders determine the criteria for project selection. The weights given to each criterion are subjective and are dependent on the availability and fulfilment of the criterion.

The projects to be approved in the PSDP were scored on each criterion. The score of each criterion was then estimated as a part of the total weight given to that criterion. The total preference score was calculated using the following mathematical equation:

$$S_T = w_1 s_{i1} + w_2 s_{i2} + \ldots + w_n s_{in} = \sum_{j=1}^{n} w_j s_{i_j} \text{------------------------ (3)}$$

To make an MCDA performance matrix, this study focused on the choice of key players to give more informed data. A key player in this study was a person who could give us suitable and substantial information for the creation of our performance matrix for the MCDA (Dodgson et al, 2009). Key informants were selected to signify all the important viewpoints about resource allocation in Balochistan. They were the people who cannot participate in the process of PSDP making but their values should be represented in the matrix to make an impact on the decision-making. The study was not limited to the views of these key informants. Supplementary informants from the Department of Finance, Planning and Development Department and the Chief Minister's Office were also involved because of their expertise and knowledge about the process of PSDP allocations.

While collecting data from these informants, we ensured that all contributors are given equal opportunities to give their viewpoints. It was ensured that the minority points of view are not marginalised in the process of data collection. They assisted the participants through numerous phases, getting pertinent knowledge and findings. Through knowledge sharing, it was ensured that every participant also envisioned the larger picture for which the MCDA is working.

The present study uses one of the typical features of multi-criteria analysis known as a performance matrix (Dodgson et al, 2009). In such a matrix, each column describes the performance of the options against each criterion and each row describes an option (Dodgson et al, 2009). This study used numerical values for each criterion of individual performance assessments that are often expressed as 'bullet point' scores, or colour coding, in other research.

For this study, the performance matrix was key for the analysis of each project by any department. The departments can assess the extent to which their PSDP objectives are met by the entries in the matrix and rank their project for efficient selection. This spontaneous valuation of data ensures timely and operative selection of projects for the departments (Dodgson et al., 2009).

Interviews

The scope of an interview changes with the experience of the researcher and the research questions under consideration (Cannell et. al, 1981). For this study, the interviewer wanted to nudge the interviewee to share a detailed account of the process of PSDP (Emans, 2019, and Kelly, Bourgeault & Dingwall, 2010). The aim of these interviews was to gain information about resource allocation from the knowledge of the members of the four departments (Willis, 2018). The investigators used both semi-structured and unstructured interviews. An interview protocol was developed for semi-structured interviews. On the other hand, unstructured interviews were directed by a set of determined open-ended questions, followed by questions that arose during the interview (Emans, 2019).

The main emphasis throughout the interview was on the interviewee's knowledge and interest in the process of PSDP (Jones, 2020). The main test during the semi-structured interviews was to quickly develop a rapport because of limited time (Emans, 2019). Thus, the interviewers introduced themselves first and then explained the purpose of their study. The interviewees were told that the information they shared would be kept anonymous and confidential. Following that, the interviewees were enquired about their careers and experiences. Then verbal consent was taken before opening the proper discussion. During an interview, the researcher needs to be alert and not ignore the social role and power differentials between the interviewee and the interviewer (Travers, 2019).

Transcription of Interviews

The contributors of this study mostly spoke Urdu, and few also spoke Balochi as the lead PI is a Baloch. Interviewees were given the option to express themselves in any language so that they could voice their opinions better. Then the recorded interviews were translated/transcribed into English. To reduce the subjectivity in transcription, the interviews were translated and transcribed by professionals, which was cross-checked by the authors of this study to ensure it was close to the actual expressions of the participants (Henderson, 2018; Loubere, 2017).

4. FINDINGS AND DISCUSSION

Analysis of PSDP from 2011 to 2021

Graphical Analysis

The graphical analysis comprises bar graphs that show the disbursement of PSDP in Communication & Works, Education, Health and Social Welfare departments in the 10 districts during the last 10 years i.e., 2011 to 2021.

Figure 1 Percentage Allocation of PSDP among 4 Departments in District Quetta

Quetta

	2011 - 2012	2012 - 2013	2013 - 2014	2014 - 2015	2015 - 2016	2016 - 2017	2017 - 2018	2018 - 2019	2019 - 2020	2020 - 2021
■ Communication %	8.8%	18.3%	45.9%	17.6%	15.9%	15.9%	14.0%	13.8%	22.1%	19.3%
■ Education %	22.3%	13.8%	22.9%	16.2%	16.5%	17.1%	12.4%	7.6%	5.7%	10.3%
■ Health %	18.7%	17.9%	13.5%	11.2%	11.7%	8.7%	18.3%	27.8%	17.4%	28.8%
■ Social Work %	12.9%	10.8%	36.2%	40.9%	55.1%	41.5%	69.3%	22.0%	6.9%	22.3%
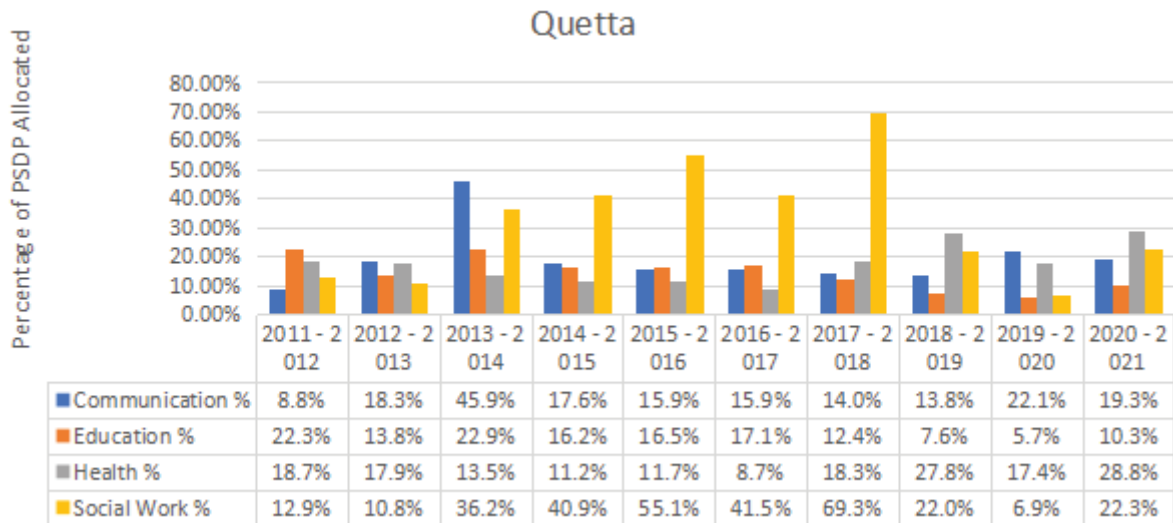
Sources: GoB (various issues). PSDP 2011-2021.

Figure 2 Percentage Allocation of PSDP among 4 Departments in District Khuzdar

Khuzdar

	2011 - 2012	2012 - 2013	2013 - 2014	2014 - 2015	2015 - 2016	2016 - 2017	2017 - 2018	2018 - 2019	2019 - 2020	2020 - 2021
■ Communication %	4.5%	4.8%	1.8%	5.9%	7.9%	9.5%	5.7%	5.2%	1.7%	4.2%
■ Education %	1.8%	5.8%	1.2%	3.6%	3.0%	2.1%	6.4%	5.1%	3.0%	3.7%
■ Health %	1.6%	1.6%	12.5%	13.5%	10.5%	3.4%	9.1%	1.2%	7.6%	5.9%
■ Social Work %	0.0%	0.0%	0.0%	10.1%	0.0%	5.2%	1.4%	0.0%	0.3%	0.0%
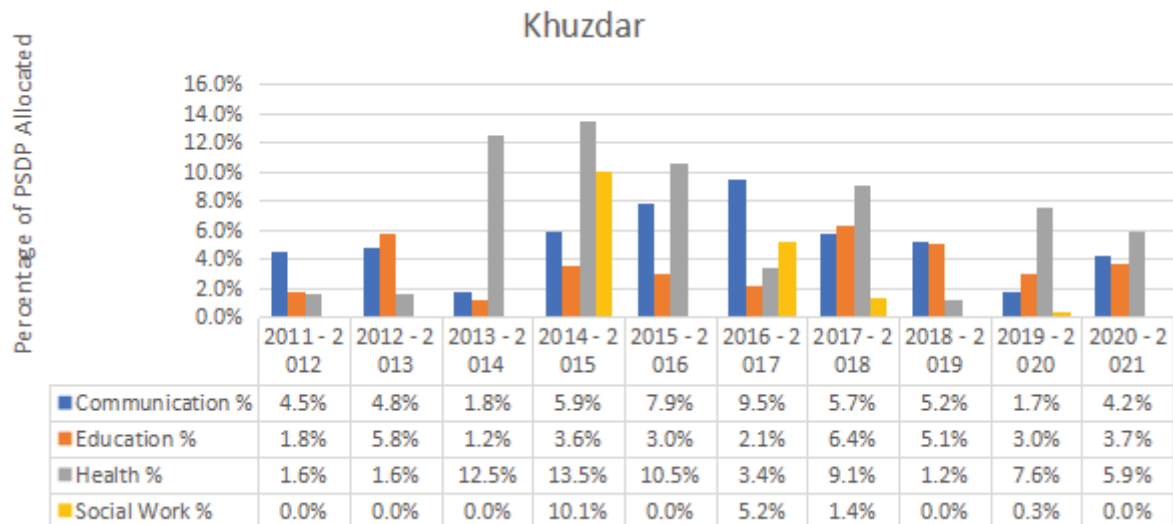
Sources: GoB (various issues). PSDP 2011-2021.

Figure 3 Percentage Allocation of PSDP among 4 Departments in District Killa Abdullah

Killa Abdullah

	2011 - 2012	2012 - 2013	2013 - 2014	2014 - 2015	2015 - 2016	2016 - 2017	2017 - 2018	2018 - 2019	2019 - 2020	2020 - 2021
■ Communication %	3.2%	5.0%	1.3%	4.5%	5.5%	4.3%	7.6%	3.5%	1.9%	3.5%
■ Education %	4.8%	4.1%	0.0%	3.2%	1.6%	1.9%	2.8%	2.1%	1.1%	5.8%
■ Health %	7.5%	8.9%	1.1%	2.6%	2.2%	0.4%	0.4%	1.1%	1.4%	4.2%
■ Social Work %	0.0%	2.5%	0.0%	0.6%	9.0%	2.6%	1.1%	0.7%	0.0%	0.0%

Sources: GoB (various issues). PSDP 2011-2021.

Figure 4 Percentage Allocation of PSDP among 4 Departments in District Kalat

Kalat

	2011 - 2012	2012 - 2013	2013 - 2014	2014 - 2015	2015 - 2016	2016 - 2017	2017 - 2018	2018 - 2019	2019 - 2020	2020 - 2021
Communication %	2.3%	1.8%	0.6%	1.6%	2.6%	1.6%	2.2%	2.2%	1.2%	1.4%
Education %	3.7%	1.4%	0.3%	0.7%	1.2%	1.4%	1.3%	1.1%	0.8%	1.1%
Health %	3.7%	2.8%	0.3%	1.7%	2.5%	0.5%	0.7%	1.1%	0.4%	0.9%
Social Work %	0.0%	0.2%	0.0%	0.0%	0.0%	0.0%	0.0%	7.6%	0.0%	0.0%

Sources: GoB (various issues). PSDP 2011-2021.

Figure 5 Percentage Allocation of PSDP among 4 Departments in District Mastung

Mastung

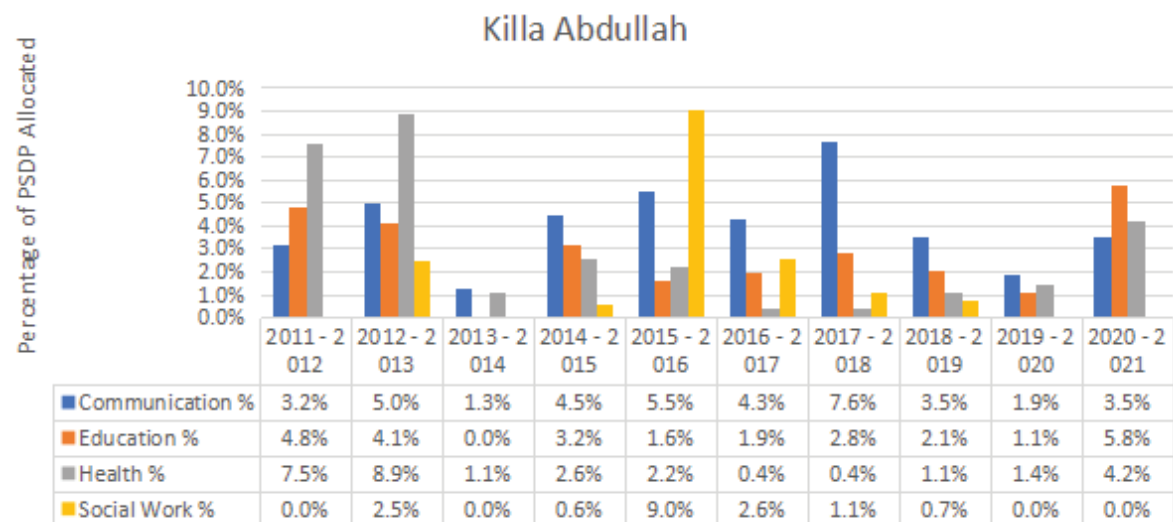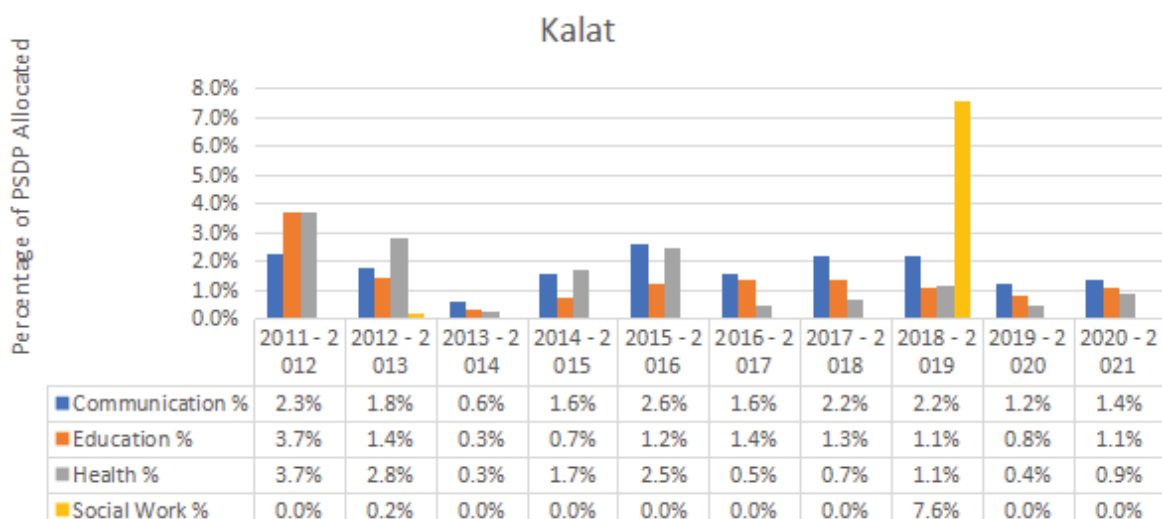|	2011 - 2012	2012 - 2013	2013 - 2014	2014 - 2015	2015 - 2016	2016 - 2017	2017 - 2018	2018 - 2019	2019 - 2020	2020 - 2021
Communication %	1.8%	2.8%	0.8%	2.0%	1.8%	1.1%	2.2%	1.1%	0.8%	0.5%
Education %	3.2%	6.3%	0.3%	1.1%	0.8%	0.9%	0.8%	0.9%	1.3%	0.4%
Health %	2.5%	0.0%	0.0%	0.1%	0.4%	0.3%	0.1%	0.4%	0.4%	0.4%
Social Work %	3.1%	1.5%	0.0%	0.0%	0.0%	0.0%	0.0%	2.0%	0.0%	1.5%

Sources: GoB (various issues). PSDP 2011-2021.

Figure 6 Percentage Allocation of PSDP among 4 Departments in District Gwadar

Gwadar

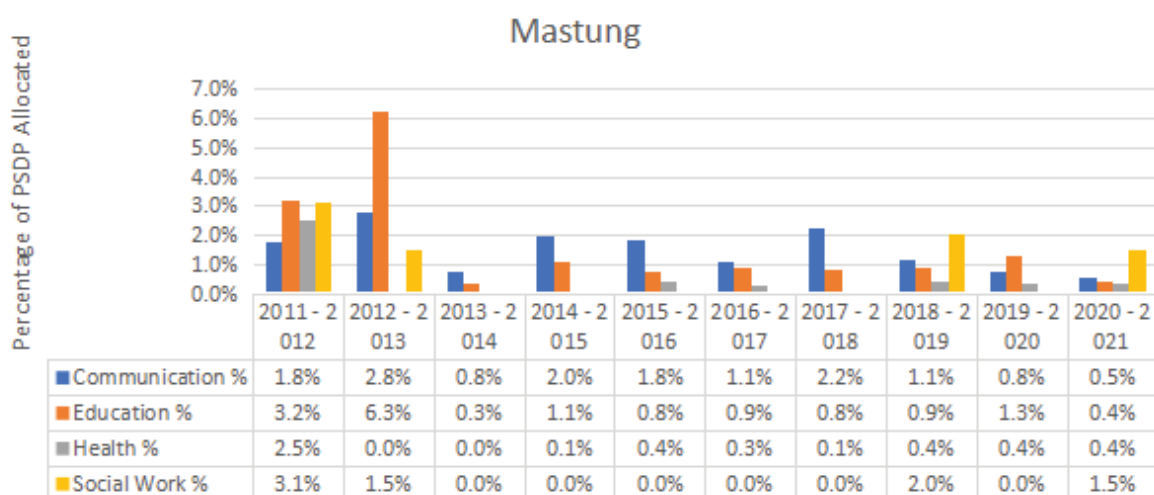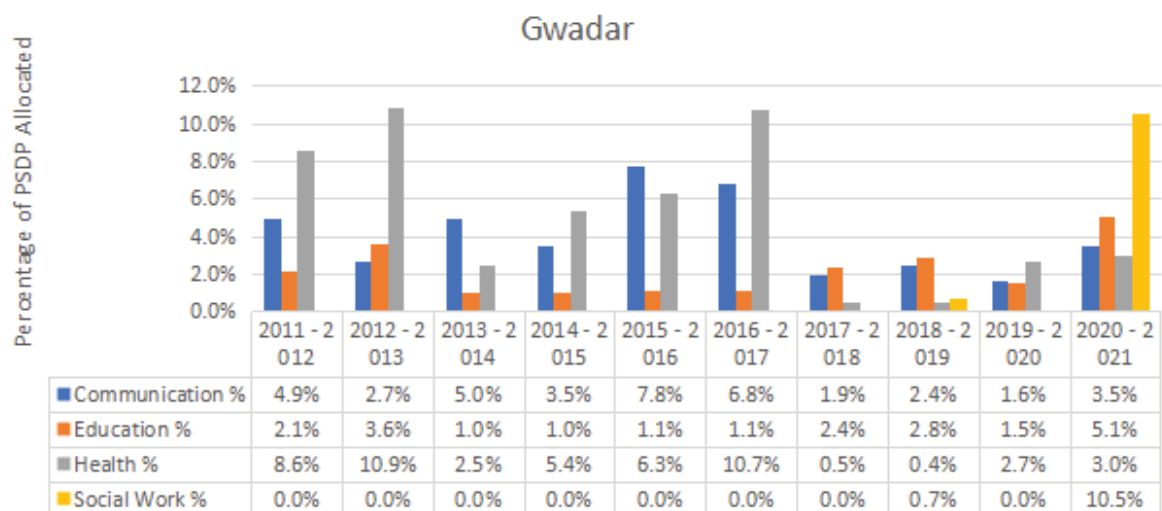|	2011 - 2012	2012 - 2013	2013 - 2014	2014 - 2015	2015 - 2016	2016 - 2017	2017 - 2018	2018 - 2019	2019 - 2020	2020 - 2021
Communication %	4.9%	2.7%	5.0%	3.5%	7.8%	6.8%	1.9%	2.4%	1.6%	3.5%
Education %	2.1%	3.6%	1.0%	1.0%	1.1%	1.1%	2.4%	2.8%	1.5%	5.1%
Health %	8.6%	10.9%	2.5%	5.4%	6.3%	10.7%	0.5%	0.4%	2.7%	3.0%
Social Work %	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.7%	0.0%	10.5%

Sources: GoB (various issues). PSDP 2011-2021.

Figure 7 Percentage Allocation of PSDP among 4 Departments in District Chagai

Chagai

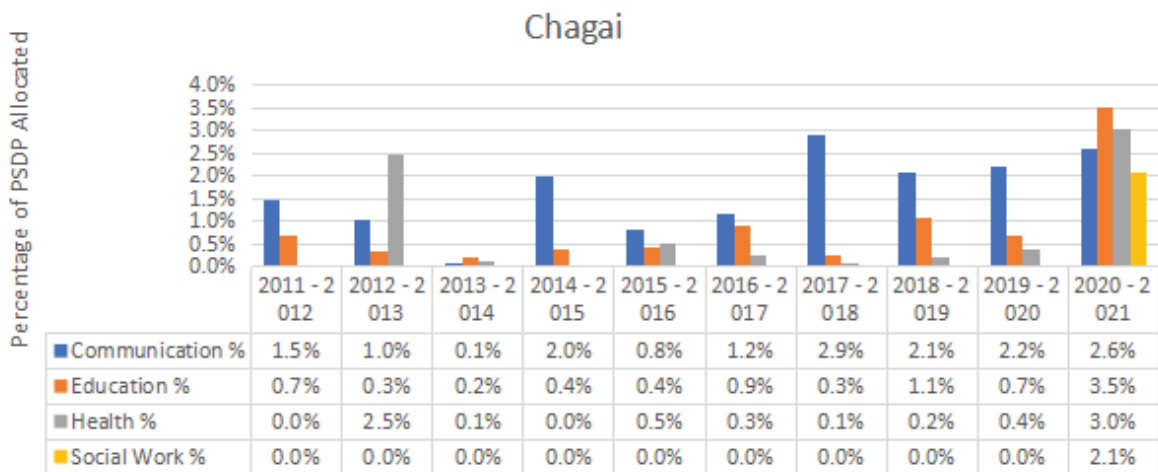|	2011 - 2012	2012 - 2013	2013 - 2014	2014 - 2015	2015 - 2016	2016 - 2017	2017 - 2018	2018 - 2019	2019 - 2020	2020 - 2021
Communication %	1.5%	1.0%	0.1%	2.0%	0.8%	1.2%	2.9%	2.1%	2.2%	2.6%
Education %	0.7%	0.3%	0.2%	0.4%	0.4%	0.9%	0.3%	1.1%	0.7%	3.5%
Health %	0.0%	2.5%	0.1%	0.0%	0.5%	0.3%	0.1%	0.2%	0.4%	3.0%
Social Work %	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	2.1%

Sources: GoB (various issues). PSDP 2011-2021.

Figure 8 Percentage Allocation of PSDP among 4 Departments in District Barkhan

Barkhan

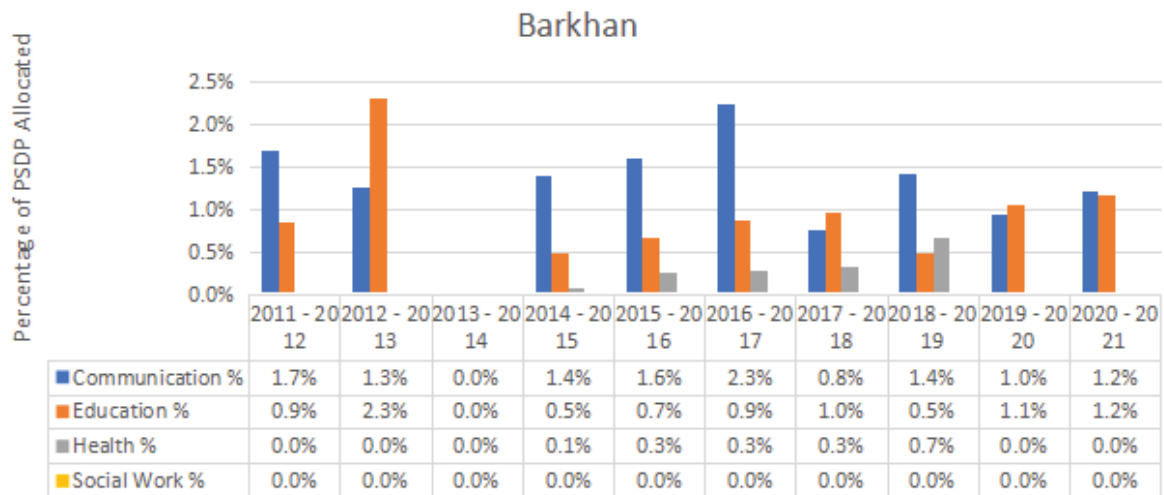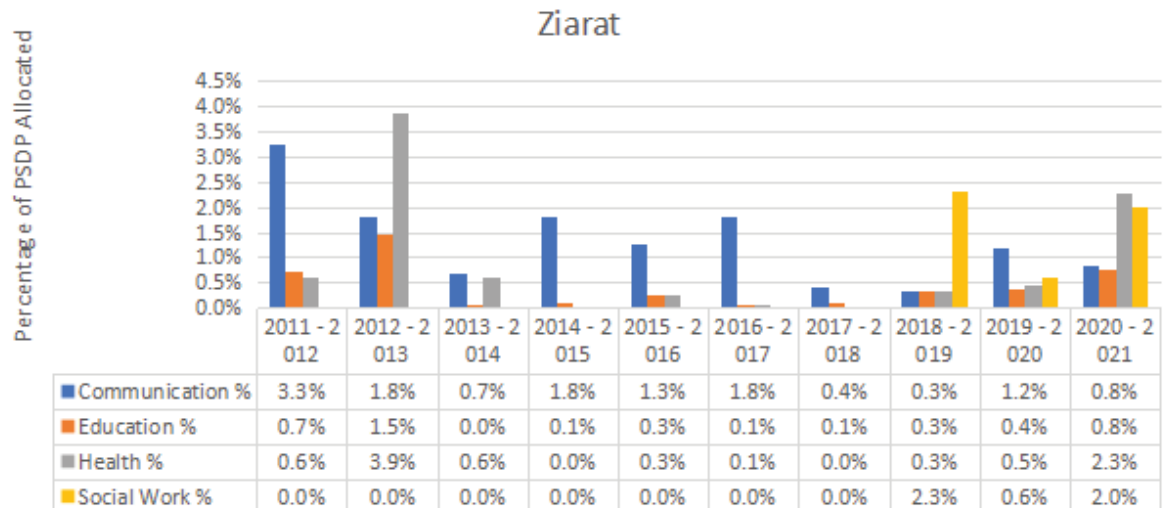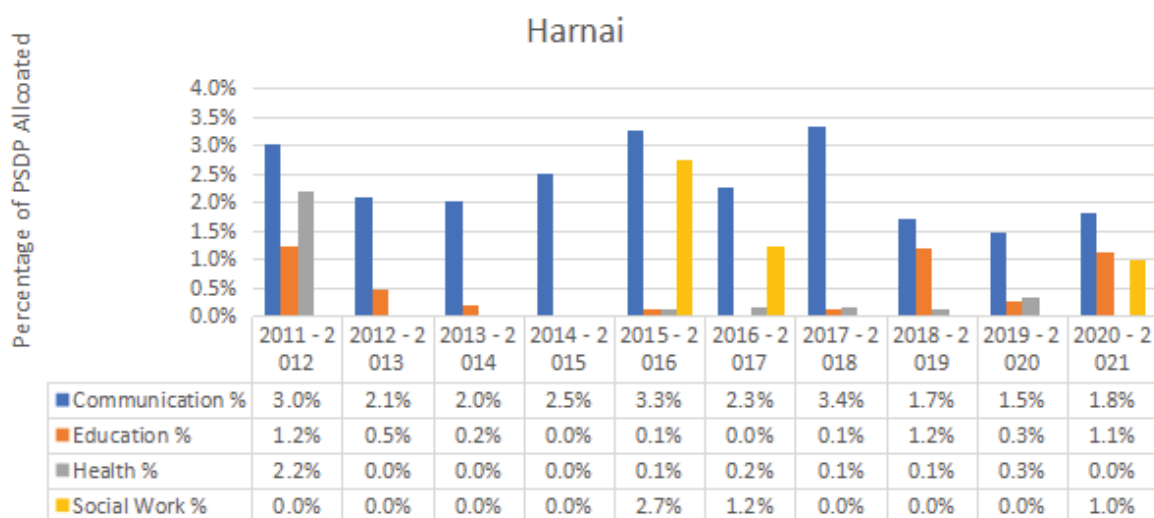|	2011 - 2012	2012 - 2013	2013 - 2014	2014 - 2015	2015 - 2016	2016 - 2017	2017 - 2018	2018 - 2019	2019 - 2020	2020 - 2021
Communication %	1.7%	1.3%	0.0%	1.4%	1.6%	2.3%	0.8%	1.4%	1.0%	1.2%
Education %	0.9%	2.3%	0.0%	0.5%	0.7%	0.9%	1.0%	0.5%	1.1%	1.2%
Health %	0.0%	0.0%	0.0%	0.1%	0.3%	0.3%	0.3%	0.7%	0.0%	0.0%
Social Work %	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%

Sources: GoB (various issues). PSDP 2011-2021.

Figure 9 Percentage Allocation of PSDP among 4 Departments in District Ziarat

Ziarat

	2011 - 2012	2012 - 2013	2013 - 2014	2014 - 2015	2015 - 2016	2016 - 2017	2017 - 2018	2018 - 2019	2019 - 2020	2020 - 2021
Communication %	3.3%	1.8%	0.7%	1.8%	1.3%	1.8%	0.4%	0.3%	1.2%	0.8%
Education %	0.7%	1.5%	0.0%	0.1%	0.3%	0.1%	0.1%	0.3%	0.4%	0.8%
Health %	0.6%	3.9%	0.6%	0.0%	0.3%	0.1%	0.0%	0.3%	0.5%	2.3%
Social Work %	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	2.3%	0.6%	2.0%

Sources: GoB (various issues). PSDP 2011-2021.

Figure 10 Percentage Allocation of PSDP among 4 Departments in District Harnai

	2011 - 2012	2012 - 2013	2013 - 2014	2014 - 2015	2015 - 2016	2016 - 2017	2017 - 2018	2018 - 2019	2019 - 2020	2020 - 2021
■ Communication %	3.0%	2.1%	2.0%	2.5%	3.3%	2.3%	3.4%	1.7%	1.5%	1.8%
■ Education %	1.2%	0.5%	0.2%	0.0%	0.1%	0.0%	0.1%	1.2%	0.3%	1.1%
■ Health %	2.2%	0.0%	0.0%	0.0%	0.1%	0.2%	0.1%	0.1%	0.3%	0.0%
■ Social Work %	0.0%	0.0%	0.0%	0.0%	2.7%	1.2%	0.0%	0.0%	0.0%	1.0%

Sources: GoB (various issues). PSDP 2011-2021.

Comparative Analysis

A comparative analysis of the disbursement of PSDP in the 10 districts in the last ten years can be seen in Table 2. The allocated percentages are averages for the last 10 years. The discrepancies in the allocation of PSDP to the departments are quite evident. Some districts with more population received fewer funds as compared to less populated and smaller districts. This inefficiency justifies the purpose of this research as currently, the Government of Balochistan has no proper model or matrix to allocate the development budget to the districts or even to the departments in an efficient manner.

Table 2: Comparative Analysis of the Disbursement of PSDP in the 10 Districts

Districts	Population	Area (sq. km)	Communication & Works	Education	Health	Social Welfare
Quetta	2,269,473	3,447	19%	15%	17%	32%
Khuzdar	798,896	14,958	5%	4%	7%	2%
Killa Abdullah	758,354	4,894	4%	3%	3%	2%
Kalat	412,058	8,416	2%	1%	1%	1%
Mastung	265,676	3,308	1%	2%	1%	1%
Gwadar	262,253	12,637	4%	2%	5%	1%
Chagai	226,517	44,748	2%	1%	1%	0.5%
Barkhan	171,025	3,514	1%	1%	0.5%	0%

| Ziarat | 160,095 | 3,301 | 1% | 0.5% | 1% | 1% |
| Harnai | 97,052 | 2,492 | 2% | 1% | 0.5% | 1% |

Sources: GoB (various issues). PSDP 2011-2021.

Implications of PSDP allocation on Literacy Outcomes.

Table 3 provides an illustration of PSDP allocations for literacy outcomes of the population 10 years and older in the 10 districts under study. This Pakistan Social & Living Standard Measurement (PSLM) indicator was used to put the argument in perspective that the PSDP allocations are not translating into sustainable outcomes of living standards in Balochistan. Despite investing heavily in Quetta there was a minimal improvement in the PSLM indicator of literacy outcome. Surprisingly, in districts like Khuzdar and Kalat, there was a huge drop in literacy despite huge PSDP allocations. On the other hand, districts like Ziarat and Harnai showed improvement despite minimum PSDP allocations. This shows that PSDP allocations are neither efficient nor effective and they require better tools and techniques for efficiency. Building upon these findings this study formulated the mathematical model.

Table 3: Comparison of Literacy Outcomes – Population 10 Years and Older in the 10 Districts

District	PSLM 2014 -2015	PSLM 2019 -2020
Quetta	63	64
Chagai	30	Data Not Available
Khuzdar	45	22
Killa Abdullah	27	39
Gwadar	62	61
Kalat	54	33
Mastung	59	54
Barkhan	29	26
Ziarat	39	43
Harnai	29	39

Sources: GOP (2016) and (2021).

Application of the Mathematical Model

The mathematical model was applied to the secondary data on population, area, and PSDP. For practical use of the model, weights for the population and area of each district were estimated. The weight for each district was taken as a part of the total. Table 4 shows the weights calculated for population and area for each district.

Table 4: Estimated Weights for each District

Districts	Population	Area
Quetta	18.40%	0.99%
Khuzdar	6.48%	4.31%
Killa Abdullah	6.15%	1.41%
Kalat	3.34%	2.42%
Mastung	2.15%	0.95%
Gwadar	2.13%	3.64%
Chagai	1.84%	12.89%
Barkhan	1.39%	1.01%
Ziarat	1.30%	0.95%
Harnai	0.79%	0.72%

Sources: Authors' calculation based on GoB (various issues). PSDP 2011-2021.

The weights for population show that Quetta is the most populated district (18.4%) but is among the smallest districts (0.99%), which can be seen from the weights. District Harnai is the least populated (0.79%) and the smallest (0.72%). Chagai and Gwadar (12.89% and 3.64%) are the largest districts but with low populations (1.84% and 2.13%). Khuzdar is the only district with a large area (4.31%) and the second highest population (6.48%).

Not considering the population and area statistics leads to inefficient allocation of resources. More populated and large area districts are receiving lower allocations from PSDP as shown in Table 2. Therefore, it is imperative to consider population and area as important factors in PSDP allocations.

The mathematical model estimated the amount to be allocated to each district, where the amount to be allocated to each district is a function of the total PSDP and the weights of population and area for that district. As a case, the total amount of PSDP for the year 2020-2021 was set as the input and the estimated amounts to be allocated to each district are shown in Table 5.

Table 5: Comparison of Actual and Required PSDP Allocation to each District in Billion Rs.

District	Actual PSDP	Required PSDP
Quetta	25.3	22.9
Chagai	11.1	17.4
Khuzdar	8.1	12.7

Killa Abdullah	5.2	8.9
Gwadar	3.5	6.8
Kalat	1.5	6.8
Mastung	2.2	3.6
Barkhan	0.4	2.8
Ziarat	0.9	2.6
Harnai	1.6	1.7

Sources: Authors' calculation based on GoB (various issues). PSDP 2011-2021.

Furthermore, the amount allocated to each district is then disbursed to the respective departments. The disbursement is made based on the average amount allocated to the departments previously. This systematic allocation of PSDP, firstly, to the districts and then to the departments is an attempt to remove the inefficiencies in the current development budget allocation process of Balochistan.

Table 6 shows the proposed amounts to be disbursed to the departments of each district. The amounts were estimated using the total amount allocated to the district and the historical data of each department.

Table 6: PSDP Allocation to the Departments of each District in Billion Rs.

District	Communication	Education	Health	Social Welfare
Quetta	4.3	3.3	3.9	7.2
Khuzdar	0.6	0.4	0.8	0.2
Killa Abdullah	0.3	0.2	0.2	0.1
Kalat	0.1	0.08	0.09	0.05
Mastung	0.05	0.05	0.01	0.03
Gwadar	0.2	0.1	0.3	0.07
Chagai	0.2	0.1	0.1	0.03
Barkhan	0.03	0.02	0.004	0
Ziarat	0.03	0.01	0.02	0.01
Harnai	0.04	0.008	0.005	0.008

Sources: Authors' calculation based on GoB (various issues). PSDP 2011-2021.

Application of Performance Matrix

This performance matrix used the numerical analysis in two stages. In the first stage scoring for each expected consequence of each option was assigned a numerical score. In the second stage, numerical weights were assigned to each criterion keeping in view their importance for the process of PSDP allocations. The matrix was developed to rank the public sector development projects. The criteria used in the matrix were the themes obtained from the interviews and focus group discussions with the personnel of the relevant departments. Each project was given a score on a scale of 0–100 for each criterion. The score of each criterion given to a project was then taken as a product with the assigned weight of that criterion. The final score for each project was calculated using Equation 3 mentioned in the Research Methodology section. Table 6 is an example of how the health department can prioritise different projects for a given year.

Table 7: Project Decision Matrix for Health Department

Project Name	District MPI Rank	District Pervious PSDP Funds	Infrastructure for Project	Project Prerequisites	Project Risks	Score
P1	10	10	100	100	100	**46**
P2	20	70	100	100	100	**67**
P3	90	60	66	100	50	**77**
P4	100	30	66	0	50	**51**
P5	80	80	33	100	0	**71**
Weights	*30*	*30*	*10*	*20*	*10*	

Sources: Authors' calculation based on GoB (various issues). PSDP 2011-2021 and GOP and UNDP Pakistan 2016.

Qualitative Analysis and Findings

This section covers the results of qualitative data collection and their analysis. This section analyses the data to answer research questions later. Data findings are presented under two themes that emerged during multiple phases of data analysis and to create thick description observation exhibits are also added.

Theme 1: The process of PSDP allocation is influenced by political clientelism

The initial objective of this research is to understand how political clientelism influences the process of development budget allocations in Balochistan. The finance minister expressed his concerns about political clientelism as follows:

Minister: *A group of (influential) people would sit together and make a budget. Similarly, if we look at the process of PSDP allocations, it is a free giveaway of projects to MPAs, ministers, civil servants, and a group of influential people without due process.*

Whereas a member of the provincial assembly from the opposition claims that:

MPA: *Apart from this if we look at PSDP allocations in Balochistan over the last 12 years since I have been a member*

of parliament, I can say that the projects are either included on the wishes of contractors or on the political commitments of the MPAs. We do build schools but there are no students or teachers to go to those schools; we build hospitals but there are no doctors or patients in those hospitals.

A senior official of the education department further explained how political power works in their department.

DP1: *[…] for example, if the government wants to open a girls' college in any district, they must ask the department if a college is required there or not. However, they decide on most of the projects based on political influence. MPAs directly approach the Chief Minister and demand a college or a school and their project is included in the PSDP without checking the needs of the area or department.*

When an official of the health department was asked how they decided how funds are allocated yearly basis in their department?

DP2: *For this, we have a committee, but that committee has no say in the decision-making. For example, in District Khuzdar all the MPAs are from the opposition, so they hardly get any projects. There are ongoing projects, but they don't get the required funds. As long as we have coalition governments in Balochistan our resource allocation cannot improve.*

The deputy commissioner, who is the administrative head of the district, shares his experience about PSDP allocations:

DC5: *I was studying the last year's PSDP and I could feel the influence of certain people. I won't take any names but there is one district that is the third or fourth most developed area in Balochistan but every second or third project was assigned to that district (kamal log hai hum).*

Observation Exhibit 1 Kamal log hai hum

This expression of Urdu is usually used to express amazement, particularly about the ability and capacity of a person. Here the interviewee is being sarcastic about the level of ignorance of the decision-makers. He is expressing his powerlessness and frustration through satire.

Another Deputy Commissioner was asked then how they try to address the issues and problems of the people living in his district.

DC3: *…we approach an influential contractor or a politician to address their issues. We do not have the capacity to address this at the district level. We can only address the administrative issues but addressing the financial issues is above our pay grade. (humaray par jal jatay hai).*

Observation Exhibit 2 Humaray par jal jatay hai

This expression is usually used to express a constraint or the consequence of an action. The expression is usually used to express fear or helplessness in doing a job. Apprehensions are usually related to the terrible consequences of an act. Here the person is indicating that if he tries to intervene in the process of PSDP allocations he can be punished.

While head of another district administration talked about his level of involvement in the PSDP allocations:

DC5: *To be honest with you, I had zero involvement in the process of PSDP allocations, I sent a list of PSDP*

programmes, but that list was created by the MPA of my district who is also a minister. He created a list of projects with the help of his political workers and that list of projects was approved by the P&D department because of his influence. If we send a list of our own to the P&D, they do not consider it until and unless endorsed by our MPA.

When he was further asked why he did not stop them as it was a clear waste of resources.

DC5: I also had the same feelings that they are wasting the resources of the government, but I couldn't do or say anything. Even if I had said something nothing would have happened, the MPA Sahab would have gotten angry, and I would have been transferred. It is important for our career to serve as a DC. If we confront these politicians, they will not let us serve in any districts. We have our limitations. (humari apne majburian hoti hai)

Observation Exhibit 3 Humari apne majburian hoti hai

Here the interviewee is expressing his helplessness for not doing much about fair resource allocation. This expression shows the desire to do the right thing, but reluctance to do it because of the profound consequences they could face. They all fear that their careers could be ruined if they don't get in line.

The deputy commissioner of one of the districts that had the lowest PSDP allocations explained that:

DC6: The MPA of this district was in opposition during the last tenure (2013-18) because of which he was not given the funds. MPAs or any political person get funds based on their relationship with the CM, which is the main factor for resource allocation in Balochistan. There is no rule of thumb or any policy for PSDP allocations; it depends on the influence and networking (talukat) of the MPA.

Observation Exhibit 4 Talukat

The denotative translation of this word can be network, but the connotative meaning of this word goes beyond that. In our society, this word is used to express ultimate power. It is used to indicate that a person has the type of connections that can get work done. This word means you have connections with powerful actors responsible for major decisions in Balochistan.

Theme 2: Lack of transparency and accountability in projects

During data collection, it was observed that the projects in progress lack transparency and accountability measures. An officer of the education department shared his experience:

DP1: It was very surprising to us as on papers the building was completed. We had even bought the required furniture and equipment for that college, but there was no building on the ground.

He further shared:

DP1: Recently the CM visited the XYZ district. We discovered that two of our colleges that were built from MPA funds were completed in 2017, but we were not informed about this. So, when a project is done with MPAs funds we cannot do accountability for it as we are not informed about it at any stage.

Another officer explained that they have the tools for monitoring and accountability, but they do not utilise them:

DP5: *The Planning Commission has provided us with a set of tools such as PC1, PC2, PC3, PC4, and PC5 but, unfortunately, we hardly use these tools. For example, PC2 is made before PC1 in which we carry out a survey study related to the project. However, in Balochistan, we do not do any survey studies. Then with the help of PC2, you make your PC1. Then we have PC3 for weekly, monthly, or quarterly progress reports. Through PC3 we share our financial and physical progress with the department. Then we have PC4 that we submit at the end of the project. Finally, there is PC5 that we never use. It is for the reflection of the whole project once it is completed. For the accountably we can use PC3 but, sadly, we do not have funds to go and conduct the visits to record the progress of any project.*

An officer of the social welfare department shared his experience:

DP3: *We have the PC2 proforma of the Planning Commission, which has a checklist of indicators. However, we hardly follow it and make feasibility. For the last two years, we are making feasibility reports due to pressure from the high court, otherwise, we are not concerned if a project is feasible or not. Then we have PC3 which documents the progress of a project on a monthly or quarterly basis, but we never use it.*

A deputy commissioner discussed why it is hard to do accountability:

DC1: *Actually, things on the ground are very complex. If someone is not performing their duty, we can stop their salary because of a Supreme Court order. However, if we cut someone's salary, the union goes on strike at the district level. If we ignore the strike, they start agitation at the provincial level, and then at the country-wide level. Consequently, we get instructions to negotiate with them. As a result, instead of going through all these troubles, we tend to ignore such things.*

Another Deputy Commissioner explained how unaccountability is affecting the performance of departments:

DC3: *The level of seriousness of departments, such as health and education, is almost the same in all the districts of Balochistan. You will hardly find a person serious about their job because we have an ineffective accountability mechanism. They know that even if they are terminated from their jobs they would be reinstated; even if a person is dismissed ten times they will be reinstated ten times. They are certain they will never lose their jobs, which is why they do not perform. There should be an end to such things; if we don't have deterrence for such people, things will not change. Let me give you an example. After 10 years we were able to deduct the pay of the staff in C&W and out of 1,400 only approximately 700 are performing their duties; the rest are still missing but we cannot fire them. Command and control are weak, and they are getting patronage from influential people. If the CM can call you for a soldier (Sipahe) then you can very well imagine how well-connected they are.*

A deputy commissioner explained why they cannot punish their officers:

DC4: *We don't have the authority to punish them, and when we report it to the concerned departments, they hardly take any action against them. Maybe they are too busy doing their jobs and do not get time to check our reports or maybe they ignore them on purpose.*

A member of the provincial assembly asserted that the process must be made more transparent:

MPA: *We must make our system transparent. By transparency I mean people should know how much money is allocated, and they should be able to check the progress of each project in real-time, the timeframe, the amount of money spent, and the targets.*

A deputy commissioner shared his thoughts about transparency:

DC2: *There is no collaboration, no information sharing, nothing among them (departments). The process is very simple, i.e., write a concept paper at your home, get the signature of the concerned engineer, and drop it off at the planning and development department. They will include it in the PSDP document. From there on it depends on your power (zor-e-bazu) or influence if it becomes a part of the final budget document.*

> **Observation Exhibit 5 Zor-e-bazu**
>
> This expression is used to compare power between two or more persons. Here the interviewee is implying that there is a tug of war between different powerful actors, and they win the war based on their power. This means that there is no room for merit or law for the allocation of PSDP projects.

The findings of this research showed that there are inefficiencies and inequalities in the process of PSDP allocations in Balochistan. The process of PSDP allocations is influenced by political clientelism and there are impediments and shortcomings in the process of allocating the PSDP funds. Realizing them is vital for effective PSDP allocations. The data on PSDP allocations in Communication & Works, Education, Health and Social Welfare departments in the 10 districts during the last 10 years i.e., 2011 to 2021 indicated discrepancies in the allocation of PSDP to the departments. Some districts with more population and area received fewer funds as compared to less populated and smaller districts. This inefficiency justifies the purpose of this research since currently, the Government of Balochistan has no proper model or matrix for the efficient allocation of PSDP projects to the districts or even to the departments. The analysis of quantitative data further highlighted that ignoring the population and area statistics lead to an inefficient allocation of resources. More populated and large area districts received lesser allocations from PSDP as shown in the figures. Therefore, as discussed in the literature review it is imperative to consider population and area as important factors for PSPD allocations.

Below, we answer all three questions raised in the introduction section before the conclusion and recommendations.

Question 1: How political clientelism influences the process of PSDP allocations in Balochistan?

The findings of this research indicated that the process of PSDP allocations is influenced by political clientelism. High officials such as the minister of finance showed their concern about it and admitted that most of the projects are included to please the members of the parliament and their followers. As argued by Berenschot (2018) the powerful political actors reinforce their influence by giving their supporters desired projects to create a sense of obligation that would ultimately be reciprocated in a time of need. While further explaining the influence of political actors, another official of the education department claimed that schools or colleges are built without any need for assessment, and projects are included on the wishes of influential people.

As discussed by Stokes (2007) the more powerful political actors do not need to take public office. Even without a public office, they would still be considered credible enough to promise their voters access to public resources. The politicians' influence on state resources is so strong that deputy commissioners, who are the administrative heads of districts, are not taken into the loop while allocating PSDP funds to their districts. This resonates with the study of Berenschot & Aspinall (2020) that politicians find ways to bypass, manipulate, or abolish official procedures of resource distribution. They replace the prescribed standards for selecting recipients of government projects with their own political standards such as party loyalty. However, as asserted by Cruz and Keefer, (2015) in developing countries a high degree of discretionary control over the state resources exercised by their bureaucrats seems to be missing in the case of Balochistan. Hence the politician holds autonomous power, making them more powerful actors in resource allocation.

Apart from this, not all the politicians seem to be influential enough to decide about the PSDP of their constituency as a Deputy Commissioner explained that the member of parliament of his district was in opposition for five years hence his district was allocated the lowest number of projects in PSDP. Due to this political victimisation, many districts in Balochistan faces development problems over the years. As explained by Gherghina & Nemčok, (2021) it has immense negative repercussions on the functions of democracy, especially on the capability of

administrations to deliver necessary public policies. The political parties in Balochistan are more focused to consolidate public resources and then supply them through their private links. This is one of the reasons that these political parties have less cohesion and their members tend to switch parties as they find any opportunity to do so.

Question 2: How effective resource allocation can be performed in Balochistan?

As argued if resource allocations are done without improvement in the process of fund allocation and supervision of the schemes then it is a zero-sum equation. Inefficiencies in fund allocations in Balochistan have led this research to find better ways to address the issues of resource allocation. The main aim of this research was to ascertain better ways for PSDP allocations in Balochistan. The findings of the research indicate that the allocation of PSDP projects in Balochistan is disproportionate and unfair. The study has analysed the data on PSDP in Communication & Works, Education, Health and Social Welfare departments in the 10 districts during the last 10 years i.e., 2011 to 2021. It was indicated by the results that there is unfairness on both accounts i.e., district level and departmental level. Some districts have more population and areas that have been receiving fewer funds as compared to less populated and smaller districts.

Banking on the arguments of McGuire et al., (2020) for using a formulaic approach. Especially in the case of developing countries that have tried to shift away from historical resource allocations and toward resource distribution based on metrics that try to capture variance in need. There are African countries that use population weighting, Uganda, for example, developed a formula for allocating the health budget to districts based on a population index. Contemplating these arguments to overcome discrepancies in Balochistan this study has proposed a mathematical model that uses weights for the population and area of each district. This research has used these parameters on the premise that inconsideration of the population and area statistics leads to inefficient allocation of PSDP projects. More populated and large area districts are receiving lesser allocations from PSDP as shown in Table 2. Therefore, it is imperative to consider population and area as important factors while making development budget allocations. Table 3 shows the weights calculated for population and area for each district. Using the model as a case, the total amount of PSDP for the Year 2020 – 2021 was set as the input and the estimated amounts to be allocated to each district are stated in Table 4. Then in Table 5, the proposed amounts are further distributed to departments of each district.

This study envisaged that only proposing a financial model for funds allocation would not suffice, hence it constructed a matrix that will help the decision maker to select the best PSDP projects for each department. Stemming this argument from Kurth et al (2017) that complex decisions such as public resources allocations must create a balance among technical, economic, and political considerations; this paper proposes a matrix that helps in the prioritisation of scarce resources reasonably and transparently. So the decisions about PSDP allocations must involve all the stakeholders. This study uses a matrix known as multi-criteria decision analysis (MCDA). This tool is created to provide an ordering for decision makers from least preferred to most preferred option (Dodgson et al, 2009).

MCDA will help in analysing the problem in light of realistic information that will allow data and judgements to be more objective. It will help in decision making, but not take the decision (Kurth et al, 2017). This matrix offers diverse ways of examining the multifaceted issue of resource allocation by gauging the impacts of options on set criteria. This tool is an organised and official platform for engaging all stakeholders. It will provide means to interface with strictly rigorous analysis while working beyond quantitative analysis. Finally, MCDA will also help the government of Balochistan in decision justification and checks (Dodgson et al, 2009).

Question 3: What are policy inputs for the improvement of PSDP allocations in Balochistan?

Following Jobaid & Khan, (2018), this research proposes at the time of development budgeting spatial distribution should be considered. Most importantly the allocation should be made without any bias and influence as such influence and biases would turn some districts stronger and others weaker. Furthermore, the government of Balochistan should include each district's local government body to know their need and responsibilities. The government need to adopt a bottom-up approach to understand the real development needs of departments. It is

imperative to conduct proper monitoring along with an assessment of the utilisation of money that is allocated to these projects.

The government of Balochistan must use a formulaic approach for development budgeting based on perfor- mance, political goals, and fairness (McGuire et al., 2020). The efficiency in this context means that public money is spent as per policies developed (or to be developed) for the wise use of resources. While every political party should have a certain commitment and set promises within its community in terms of addressing their needs. The government to shift away from historical resource allocations and toward resource distribution based on metrics that try to capture the ground reality.

Grounded on evidence by Williams, St Denny & Bristow (2019) this study further suggests that a single approach for budgeting would make it difficult for the government. We understand that budget decisions are getting progressively difficult, especially during times of reduced public sector budget and austerity as the people of Balochistan are demanding more public services. In recent times the public has had minimal trust in the political process as they feel limited engagement in any political decision. As Park et al, (2013) suggest during such times we can gain public trust by involving them in the process. The government of Balochistan can decide their level of participation depending on their preferences. They may only inform them through objective and balanced information or can obtain their feedback about alternative opportunities and solutions. On the other hand, the public can be involved throughout the process to understand their concerns and aspirations in a better way. In the best case scenario, the public and government can work in a partnership and decide the course of action through joint decision-making.

However, if the government of Balochistan finds it difficult to engage the public in these traditional ways they can opt for innovative ways such as consensuses conferences, planning cells, deliberative polls, citizens' assemblies, and citizens juries to engage the public at a micro level that can also facilitate deliberation and participation (Escobar and Elstub 2017). The government can use the concept of 'mini public' for such engagement. Mini publics are randomly nominated residents following the principle that stakeholders affected by the issue have an equal chance of being selected to ensure the legitimacy of the process. The government need to maintain a balanced relationship between the political and economic environments and civil society organisations. They seem to be important in understanding differences in institutional design and outcomes before deciding on allocations (Sintomer et al., 2012).

Along with engaging the public the government need to ensure that the whole process of PSDP is improved. The government of Balochistan need to ensure transparency by providing information about decisions taken in the process. For a budget to be more effective it should be managed on the following four principles such as multiyear planning, transparency, public expenditure consolidation and effectiveness and efficiency. For this, the stakehold- ers need to ensure the planning of tasks, expenditure, objectives, and their effects on a yearly basis. Transparency can be achieved through clarity, comparability, and legibility of financial statements. The consolidation of public expenditure can be achieved through the synergy of revenue and expenditure with assigned tasks. Finally, efficiency and effectiveness mean matching the planned tasks, expenditures, and objectives with the outcome achieved. The government needs to establish a relationship between resource allocation and results to increase productivity. The departments can ensure efficiency by measuring and promoting progress while making evidence-based policymaking by basing decisions on performance data.

5. CONCLUSION

Balochistan has always been on the development agenda of every political party but sadly we have not witnessed any meaningful development in the region. The Public Sector Development Programme (PSDP) is considered a key component in improving the socio-economic outlook of an area. However, successive governments have failed to rationalise it despite repeated directions from the high court to plan it effectively, the current mechanism used in Balochistan for development budget allocations can be best described as incremental (Green et al., 2000). Franklin & Ebdon (2020) and O'Hagan et al. (2020), claim that in theory, development budget allocation should be done with the involvement of focal persons in the case of Balochistan the district health or education officers

at the grassroots level. However, contrary to Panday & Chowdhury (2020) and Williams et al (2019), in Balochistan centralised approach is used, where most of the decisions are taken by the provincial capital, Quetta. Mostly, departments do allocations without the involvement of key stakeholders such as people or private sectors (Escobar et. al, 2018). Furthermore, any changes such as addition/deletion in resources are done on political clientelism. This research concludes that there is no specific plan or policy for development budget allocation in Balochistan as suggested in theory (Dias & Julio, 2018; Franklin, Krane& Ebdon, 2013; Glodfrank, 2012).

Apart from this, there are other weaknesses in the process, such as, we can hardly witness any productive debates being conducted for budget allocations (Head, 2007). The majority of budget meetings are rushed, and their sessions are not long enough to ensure that the process is as inclusive and successful as it should be (Bostan et al, 2021; Jobaid & Khan, 2018: Jackobsen et al, 2016). Finally, a budget document is presented in the assembly for approval without any discussion by the members. Hence, as argued by McGuire et al (2020) the PSDP allocations turn out to be a mismatch between the people's needs, the required facility, and allocated resources. There is a huge gap between what certain districts actually need and what they get.

The findings of this research show that there are inefficiencies and inequalities in the process of PSDP allocations in Balochistan. The process of PSDP allocations is not free of political leverage and there are impediments and shortcomings and realizing them is vital for an effective allocation. The data from PSDP in Communication & Works, Education, Health and Social Welfare departments in the 10 districts during the last 10 years i.e., 2011 to 2021 indicates that discrepancies in the allocation of PSDP to the departments are quite evident. Some districts with more population and area have been receiving fewer funds as compared to less populated and smaller districts.

While further looking at the qualitative findings of this study concludes that the process of PSDP allocations is influenced by political power and as discussed in the literature review it is conceptualised as political clientelism. This research further concludes that the process is non-participatory where major stakeholders such as district-level officials or the public are ignored. The serious issues in the implementation of PSDP further influence the whole process. The need assessment for resource allocation is misdirected hence the benefits are not transferred to the public. Most importantly there is a lack of transparency and accountability in the projects because of which inefficiencies are encountered.

This whole scenario is hampering the development of Balochistan. Services and goods to the general public are underprovided while in some specific constituencies they are provided in abundance. The politicians are diverting scarce resources to create incentives for themselves to keep the general public dependent and poor. As a result, there are extreme levels of exploitation and corruption in Balochistan that are creating a trust deficit among the people of Balochistan. The political influence is so high that it has changed the basic accountability connection in the province and people go unpunished even after failing a project. This is hindering sustainable development and causing politicisation of the bureaucracy. This is ultimately obstructing the system and creating governance issues. In order to stay in power, the powerful political actors will hold to this strategy to hold back income growth and social mobility in Balochistan. Political clientelism is discouraging the administration from offering services and goods to the public as it serves the interests of powerful political actors that thrive on the poverty of Balochistan. To overcome these issues this paper, have the following recommendations.

6. POLICY IMPLICATIONS

Banking on the arguments of McGuire et al., (2020) for using a formulaic approach. Especially in the case of developing countries have tried to shift away from historical resource allocations and toward resource distribution based on metrics that try to capture variance in need. Contemplating these arguments to overcome discrepancies in Balochistan this study has proposed a mathematical model that uses weights for the population and area of each district. These parameters are used on the premise that not considering the population and area statistics leads to inefficient allocation of resources as shown in the findings.

This study envisioned that only proposing a financial model for resource allocation would not suffice, hence it designed a matrix that will help the decision maker to select the best project for each department. Stemming our

argument from Kurth et al (2017) that complex decisions such as public resources allocation must create a balance among technical, economic, and political considerations; we propose a matrix that helps in the prioritisation of scarce resources reasonably and transparently. Therefore, the decisions about resource allocation must involve all the stakeholders.

Contemplating Jobaid & Khan, (2018) this research recommends at allocations should be made without any bias and influence as such influence and biases would turn some districts stronger and others weaker. Furthermore, the governments of Balochistan should include each district's local government body to know their need and responsibilities. Grounded on evidence by Williams, St Denny & Bristow (2019) this study further suggests that a single approach for budgeting would make it difficult for the government. This study understands that budget decisions are getting progressively difficult, especially during times of reduced public sector budget and austerity as the people of Balochistan are demanding more public services. In recent times the public has had minimal trust in the political process as they feel limited engagement in any political decision. As suggested during such times we can gain public trust by involving them in the process. Along with engaging the public the government need to ensure that the whole process of PSDP is improved. The government of Balochistan need to ensure transparency by providing information about decisions taken in the process.

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PUBLIC-PRIVATE PARTNERSHIPS IN EDUCATION: EVALUATING THE EDUCATION MANAGEMENT ORGANISATIONS PROGRAMME IN SINDH, PAKISTAN

Gul Muhammad Rind and Dhani Bux Shah

ABSTRACT

The focus of this study was to investigate public-private partnerships (PPPs) in education, in this instance by evaluating the Educational Management Organisations (EMOs) Program in Sindh, Pakistan. The study was guided by the research questions that were intended to evaluate to what extent, how, in what way, and for whom the PPP mode of education through EMOs improves access to education, ensures quality and equity in education, and sustainability in the context of Sindh, Pakistan. We chose the realist evaluation as a methodological approach, applied New Public Management as a theoretical framework to answer the research questions, and adopted a mixed methods research design. The data collection included EMO policy documents, PSLM survey, SEMIS, and SAT data sets. Moreover, we conducted 37 semi-structured interviews and FGDs with the EMO stakeholders, including policy developers, school operators, managers, head-teachers, teachers, and parents. The findings indicate that PPPs through EMOs have some advantages in terms of better governance of schools through autonomy and decentralisation. The schools' accountability, monitoring, and evaluation have somehow improved. However, the broader impact of EMO reform still does not reflect in increasing access, overall quality, and ensuring equity. Also, the sustainability of these schools after the EMOs' contractual period remained unpredicted. This study may open a window for policymakers and concerned stakeholders to better understand what works, for whom, and in what circumstances to design a better regulatory framework for PPPs beyond the piecemeal approach to education reform.

1. INTRODUCTION

Public-private partnerships (PPPs) in education are a global phenomenon and are framed as a best practice to achieve educational goals. It can be broadly defined as a legal contract where the private sector provides educational services to the government for a certain period (Patrinos et al., 2009; Verger et al., 2020). In this setup, the private sector typically assumes the role of service delivery and risk-sharing. Meanwhile, the role of the government is typically to finance and ensure the values of compassion and social cohesion (Patrinos et al., 2009). The PPPs in education are also being endorsed and are operational in Pakistan, alongside the claims that PPPs can provide solutions to educational problems (e.g., related to student achievement and access to education). PPP policies and designs in education vary across and within countries. In Pakistan's education system, there are also several kinds of PPP modes in schooling, which include foundation schools (in Sindh and Punjab), voucher schools (in Punjab), adopting a school model, and the Education Management Organisation (EMO) schools.

The PPPs in education are relatively less explored and evaluated in public policy research because of their different manifestations in different parts of the world. It is different from PPPs in other sectors such as roads, buildings, and infrastructure services. Education is treated as a common public good and can be delivered without charging any fees. Most of the existing research and discussion about PPP has focused on PPP policies and outcomes in the context of its advantages. The discussion is framed as the PPP review without any substantial comparative analysis. The above approaches do not yield specific and useful information regarding the implementation or efficacy of PPPs in developing countries such as Pakistan (Gideon & Unterhalter, 2021; Verger, 2012). Also, very little attention has been given to "what works," "how," and "in which context" with respect to PPPs. The policy design for PPPs matters because of its differential impact on education. The evidence-informed policy decision can unpack the nuanced outcomes of PPP in a particular context (Verger et al., 2020).

This study evaluated the ongoing reform initiatives such as PPPs in education through EMOs' implications from the contextual perspective of the Sindh province. As such, this study tried to unpack PPP and examine issues related to educational accessibility, quality, and equity. The realist evaluation (of Pawson & Tilley, 1997) theoretical framework applied in this study helped to evaluate these PPP reforms based on contextually designed objectives. Conventionally, policy reforms have been evaluated through a single method, which only touches on some aspects of reforms. According to Yin and Davis (2007), the robust evaluation of comprehensive reforms typically requires both quantitative and qualitative evidence. This study is also a mixed-methods study, integrating robust quantitative data, in-depth qualitative interviews, and document analyses to evaluate educational PPPs in Sindh comprehensively.

Our study addressed the following research questions, framed by, and based on, the idea of examining whether quasi-government policies in education (through PPPs) are effective (or ineffective) in meeting the goals of equitable access to quality education and ensuring efficiency in education.

- To what extent, how, and for whom does the PPP mode of education through EMOs improve accessibility to education in Sindh?
- How effectively and efficiently do PPPs in education through EMOs in Sindh meet the objective of quality education?
- To what extent and in what ways do PPPs in education address the issue of equity (as related to gender, income, context (rural, urban), and academic inequality) in education?
- To what extent and in what ways are PPPs through EMOs sustainable in Sindh?

The structure of the study broadly focused on the PPP policy through EMO schools in Sindh. Further, the study is divided into five sections. The first section introduces and overviews the study. The second section reviews the relevant literature. The third section discusses the research methodology, including the theoretical framework, data collection strategies, and analysis. The fourth section presents findings and discussion. The final section presents conclusions and recommendations.

2. LITERATURE REVIEW

There are several forms of PPPs in education. In a World Bank-supported publication, The Role and Impact of PPPs in Education, Patrinos et al. (2009) delineated different types and degrees of PPPs in education, as shown in Figure 1. It can be noted that government regulation and involvement decrease as the chart moves from left to right.

Figure 1: World Bank PPPs in Education Continuum Concept
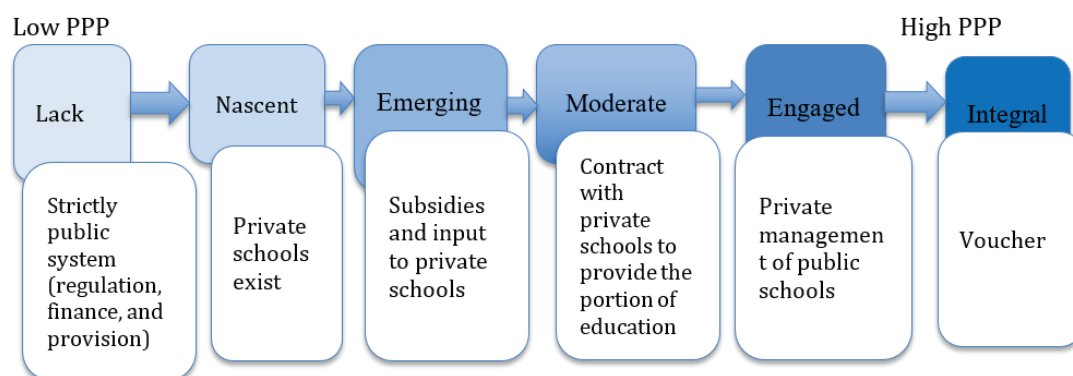
Source: Adapted from World Bank (Patrinos et al., 2009, p. 16)

In Figure 1, the left side shows low PPP with major regulatory powers at the government level. However, at the far right of the continuum, it shows a high degree of PPP where a school is under the complete private regulatory control form of a PPP with minimum government regulations, and the government's role is limited to providing financing through vouchers or subsidies. Based on the PPPs continuum concept (in Figure 1), different countries or regions have adopted various PPP models and contracts as per their government structure and financing capacity. Sindh has a largely emerging and engaged model of PPPs in the form of subsidising private schools (through SEF) and private management of public schools (through EMOs), respectively.

The Emergence of PPPs in Education

PPPs have gained popularity in various sectors in the last few decades and are commonly applied in education. PPPs in education gained prominence in the 1990s when the United Nations (UN) developed the universal primary education and education for all (EFA) goals, which instruct all governments to ensure 100% enrollment at the primary level by 2030 (UNDP, 2015). Various UN-supported agencies offered funds to governments and non-governmental organisations in the setup of PPPs to support their efforts to achieve these and other educational goals. PPP initiatives also generally encouraged the private sector, non-profit, and philanthropic organisations to supplement government agendas on education for all (UNICEF et al., 2011). PPP initiatives proliferated in the late 1990s. The PPP mode is being claimed as a key mechanism to address inefficiencies in public services and reduce inequalities (Gideon & Unterhalter, 2017). Sustainable Development Goal (17.17) also encourages to increase PPPs worldwide. Accordingly, the PPPs in education are rapidly proliferating, not only in industrialised countries but also in non-industrialised countries (Verger, 2012)

Due to the globalisation of national economies, the role of international organisations (IOs) increased in the agenda-setting of education reform and policy convergence. Rising international loans, funding, and philanthropy drastically changed states' educational development and policymaking roles. International organisations such as the World Bank and Organisations for Economic Co-operation and Development (OECD) are key drivers of policy diffusion of private sector participation in education (Ball & Youdell, 2007). UN subsidiary organisations such as UNESCO and UNICEF also promote private sector participation in developing countries to achieve SDGs (Gideon & Unterhalter, 2021; Rizvi & Lingard, 2010). The educational reform projects based on PPPs in Pakistan currently receive substantial government grants and attract external financing from the World Bank and other IOs (Afridi, 2018). The Asian Development Bank (ADB) and the World Bank have

jointly developed PPP models in Pakistan and offered loans for pursuing the EFA goals (Barrera-Osorio & Raju, 2011; UNICEF et al., 2011). Beyond the World Bank and the ADB (which finance the government to promote the private sector), bilateral partner agencies such as United States Agency for International Aid (USAID) and the UK Department for International Development (DFID) also use funding and research activities through private sector participation. Pakistan is a large recipient of international donor funding, including the World Bank, the ADB, and USAID. This funding amounts to almost 20% of the total education budget (Burki et al., 2005). In such a situation, the role of the private sector and non-state actors become inevitable. There is also a concern that in Pakistan most PPP programmes remain ad-hoc and have little systematic impact on access, quality, and equity. Further, the programmes also show little financial sustainability as most of the PPPs are financed by donors and are time-bound, and there is inconsistent financing from the government side (Bano, 2008)

PPP Programs in Education in Sindh

The Government of Pakistan (GoP) has also adopted the use of private education through PPPs by developing a policy action for resource mobilisation to reduce educational inequality and structural divide through collaboration as mentioned in the National Educational Policy, 2009:

> For promoting Public-Private Partnership in the education sector, particularly in the case of disadvantaged children, a percentage of the education budget as a grant in aid (to be decided by each province) shall be allocated to philanthropic, non-profit educational institutions. (Ministry of Education (MoE), 2009, p.20)

The Government of Pakistan currently claims that PPPs in education offer a best practice means of meeting the UN goal of education for all and SDGs (MoE, 2017). Accordingly, they are pouring resources and efforts into such models, which will likely carry major short- and long-term implications for students and the citizens of Pakistan.

Sindh is the second largest province in Pakistan, constituting 24% of Pakistan's total population. However, Sindh's literacy rate is only 56%, with urban-rural and male-female disparities. According to the 2017 census (GoP, 2017), about 50% of Sindh's population lives in rural areas, and 50% live in small urban areas. The poverty rate is 40.1%, and the majority of poverty is concentrated in rural Sindh. Moreover, an estimated six million children are out of school (SELD, 2019). This low enrolment is a serious challenge to the education sector of Pakistan. In addition, half of the schools in rural Sindh lack basic facilities such as toilets, clean water, electricity, and building infrastructure (Malik et al., 2015).

After the 18th Amendment of the Constitution, the policymaking authority of K-12 education has been entirely delegated to provinces. It has been directed that it is the responsibility of the provinces to make comprehensive education plans. Due to the lack of governing experience in Sindh, the challenge was intense to decrease the number of children not attending school (SELD, 2014). The quality of education is very abysmal in the government schools of Sindh. According to the Annual Status of Education Report 2013 (ASER- Pakistan, 2014) report, 51% of grade five students lack grade one competencies in language, and 57% of grade five students cannot perform two-digit division in mathematics. The net-enrollment rate is also comparatively low in Sindh. Figure 3 shows the net enrollment rate at the primary school level from 2004 to 2015.

Figure 2: Net Enrolment Ratio at Primary Level, in Sindh
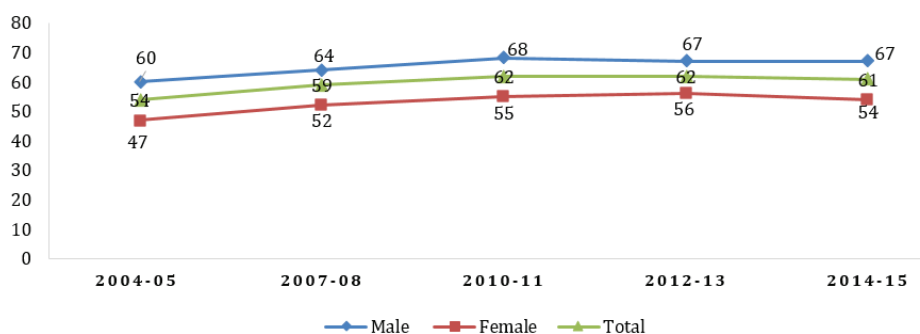
Source: Government of Sindh, SELD, (2017)

To meet these challenges, the Sindh government launched a comprehensive medium-term reform in 2006-7 called the Sindh Education Reform Program (SERP), the purpose of which was to improve access to equitable education, improve the quality of education, and provide better education governance. In 2013, the Sindh Government also passed the Sindh Right of Children to Free and Compulsory Education Act in compliance with Article 25-A of Pakistan's constitution. This legislation also exerted pressure to bring innovative solutions to the poor education system to maximise enrollment (SELD, 2017). Furthermore, the policy is meant to institutionalise accountability to improve service delivery in education, which should be aligned with National Educational Policy 2009 (SELD, 2014).

The PPPs received support from the World Bank and the ADB (LaRocque & Sipahimalani-Rao, 2019). The World Bank supported the efforts by providing financial assistance and technical support during the Sindh Education Reform Program (SELD, 2014). The role of the non-state and private sectors is deemed significant in the education of Pakistan. According to SELD (2014), the private sector provides 67% of education in Karachi and 53% in Hyderabad (both are part of urban Sindh). However, in the rural part of the province, private education only accounts for 9-10%. To reduce this disparity, the government sought to adopt PPPs in education (assumed as an innovative education model). The PPPs' focus on rural Sindh was to reduce the inequality of the rural-urban divide and out-of-school children (Barrera-Osorio & Raju, 2011). The argument of reducing the urban-rural gap in quality education, offering accessibility opportunities to out-of-school children and reducing the inefficiency of the government sector (LaRocque & Sipahimalani-Rao, 2019) paved the way for the two major forms of PPP models, i.e., Foundation Assisted Schools (FAS) through SEF, and private management of government schools through Education Management Organisations (EMOs) are discussed below.

Foundation Assisted Schools

Sindh Assembly passed the bill of the Sindh Education Foundation in 1992. Later, the governor of Sindh made it the SEF act. As a quasi-government autonomous organisation, SEF's mandate was to work in less-developed areas and the province's marginalised populations. As per the Act document (SEF act, 1992), its role and mandate were not to open and support private schools on a large scale. Later, the World Bank sought the role of SEF to scale up private schools (Barrera-Osorio et al., 2017). The SEF launched the Promotion of Private School in Rural Sindh (PPRS) through contracting by offering an education subsidy to scale up mass enrollment and paying 500 Pakistani Rupees (equal to 5 USD) per student to the private provider including individuals and local organisations (Khan et al., 2018). Currently, all schools have been renamed Foundation Assisted Schools, and these schools can also be called contract schools in the terminology of PPPs. Currently, there are 2,673 schools and 725,000 enrolled students, and 20,959 teachers in foundation-supported schools (SEF website, 2022).

Education Management Organisations

The EMOs emerged in the early 1990s in the US. It was considered a large-scale school reform as a part of market-based education reforms. Wall Street analysts coined the term EMOs along with Health Management Organisations (Miron & Gulosino 2013). EMOs vary in terms of their profit and non-profit status. Proponents believe EMOs will bring an entrepreneurial spirit and competitive ethos to public education. The theory behind the market approach of competition-based school reform is that existing government schools will improve or cease to operate. Opponents believe this will add new bureaucracy layers to education and divert public funds toward services fees charged by organisations (Miron & Gulosino 2013).

In 2015, the Government of Sindh launched the EMO program with the World Bank, the ADB, and USAID's support to ensure educational accessibility and equity (LaRocque & Sipahimalani-Rao, 2019). Most of these EMO schools opened in rural Sindh and flood-affected areas. The Government of Sindh (SELD, 2017) claims EMO reforms are a milestone toward ensuring educational equity and efficiency. They will help the government get valuable services and investments from the private sector. The objectives of the EMOs reform also include hopes to bring innovation in public schools, reduce inefficiencies and management issues, improve quality, and encourage private sector investment in rural Sindh. To give EMOs legitimacy, the Sindh government drafted the "Concession Agreement" based on PPPs Act 2010 and got it approved by the provincial assembly. The Sindh PPPs Act defines the PPPs as:

> A partnership carried out under a Public-Private Partnership Agreement between the public sector represented by an agency and a private party for the provision of an infrastructure facility, management functions, and /or service with a clear allocation of risks between the two parties (SELD, 2017, p.33)

The PPPs act attracted the attention of local and international NGOs to reach out to those marginalised areas where the government was unable to reach due to resource inefficiencies (SELD, 2017). The USAID supported 106 school buildings in Northern Sindh, and ADB also started opening 160 secondary schools in the southern Sindh districts under PPPs through the EMO program.

Currently, in Sindh, different types of organisations are operating as EMOs. These are NGOs, higher education academic institutions, and private school systems. These all are Pakistan-based organisations. However, now the government, and its supporter ADB, also intend to add more international school operators to get their innovative services. All EMOs are selected based on a competitive technical and financial bidding process (SELD, 2017). The profiles of EMOs[1] are given in the table below.

Table 1. Profile of EMOs Operating in Sindh

Name of Organisation(s)	Description (s)
Sukkur IBA University	A public sector university located in Sukkur that also manages several community colleges and government schools funded by the Government of Sindh.
The Citizen Foundation	A non-profit organisation working in the education sector of Pakistan that mainly focus on the less-privileged segment of the society
Indus Resource Centre	A Sindh-based NGO that mainly works in education, health, and other social sector activities.
Sindh Rural Support Organisation	A Sindh-based not-for-profit organisation mainly funded by the government of Sindh to work in rural sector development of the province to alleviate poverty through skill enhancement, microfinancing, education, and community empowerment.
Charter for Compassion	A non-profit international organisation that operates in Pakistan in education, health, and other social-related activities.
Health and Nutrition Development Society (HANDS) Pakistan	An international NGO that mainly focuses on disaster management, health, nutrition, and hygiene. Currently also operating in the education sector under PPPs mode
Beacon House School System	A private school system that operates in eight countries, mainly in K-12 education.

Application of NPM Concept in the PPP-EMOs Model

Our theoretical approach for this study is based on the concept of New Public Management (NPM), which is being claimed as an innovative approach to public policies through applying the values of accountability, managerialism, and decentralisation, to avoid bureaucratic hurdles (Verger & Curran, 2014; Wilkins et al., 2019). There is a common argument from the supporters of PPPs that decentralisation and separating financial and operational provisions can improve the performance of schools. The NPM concept also emphasises school

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[1] The Number of EMOs given in the table is based on the available data of 2021. However, the Sindh government has recently added more EMOs during the study period; these are not part of this study.

autonomy and helps hire quality teachers efficiently from the market. In a realist evaluation of PPPs (discussed in the following section), we have discussed EMO schools constructed in Sindh where schools' management has been given to the competitive private sector but the financing of schools is coming from the Sindh Government. It is assumed that the decentralisation of power, increasing accountability, getting specialised services from the private sector, and mobilising private sector investment all increase the accessibility to education, quality of education, and overall school efficiency (SELD, 2017).

Yet issues arise when contracts are unclear, especially surrounding how one can ensure private sector sustainability when low teachers' salaries are low in PPP schools. Policy researchers also have concerns that NPM emphasises managerial ideas through private sector participation in education, which includes standardisation, decentralisation, and performance-based approaches (Steiner-Khamsi & Draxler, 2018; Verger & Curran, 2014). They further believe NPMs transform education from a human experience into a place that manufactures products by lowering the cost of teacher preparation and increasing standardisation. The current education system is adopting business models that help them increase customers by reducing the cost of education through standardisation in education to incentivise the business sector to enter education, which also lowers the responsibility of the state (Steiner-Khamsi & Draxler, 2018). These implications of NPM can increase inequality. In a realist evaluation, the NPM concept must be fully unpacked contextually. In addition, quality and equity in education also need to be discussed beyond the market approach, which includes local norms, religious/moral values, and social cohesion. We applied the realist evaluation as a quite relevant methodology to answer these context-specific questions. The realist evaluation guides us to review relevant policy documents, develop a theory of change, revise the theory of change with the help of stakeholders, and then design the field to test the theory.

3. METHODOLOGY

We chose the realist evaluation approach (Pawson and Tilley 1997) to answer the research questions of what extent, how, in what way, and for whom the PPP mode of education through EMOs improves access to education, ensures quality and equity education, and sustainability in the context of Sindh, Pakistan? Realist evaluation is a theory-driven approach (Hewitt et al., 2012). Theory-based evaluation is an approach that focuses on the theories people have about what it takes to create a successful program or policy (Mertens & Wilson, 2019). According to Pawson and Tilley (1997), public policies, programs, or interventions for social improvement are complex and work differently in different contexts. Therefore, these policies need to be unpacked and tested in context to discover how/why complex programs work or how/why they fail. Realist evaluation is rooted in realist philosophy. It does not ask "what works" but instead asks "what works for whom in what circumstances and in what respects, and how?"(Mathison, 2005, p. 363).

The distinction between a realist methodology and a randomised control trial is that a realist inquiry model (also called a generative model) also includes internal factors such as society and context. To infer causal outcomes (O) between two events (X and Y), one needs to fully understand the underlying mechanism (M) that connects X and Y and the context (C) in which that relationship occurs (Pawson et al., 2005). Here causality is not based on controlling extraneous variables but embedded in the process (Creamer, 2018). It is sceptical toward the panacea or "context-free" approaches of policies or interventions. We, thus, decided that the realist evaluation method could be beneficially applied to evaluate the effect of the programs/policies (PPP -EMOs in education in this situation). In this study, the context was Sindh, the mechanism of EMO policies, and the required outcomes were meeting educational goals (accessibility, equity, and quality).

The core purpose of the realist evaluation is to test and refine the theory. Hence, the context-mechanism-outcome pattern (CMO) configurations in our study attempted to understand how the PPP initiative through the EMO program ensures the private management of the public schools in the targeted areas of Sindh and brings about access to education, enhances students learning outcomes, and ensure the quality and equity in education in the marginalised, and rural regions of Sindh, Pakistan. The realist evaluation helps develop and test CMO configuration empirically which leads to theory testing and refinement (Pawson & Tilley, 1997). The realist

evaluation considers public policies as an assumption about social improvements and needs to be unpacked while designing the study. According to this methodology, researchers need to construct a theory of change (or program ontology) based on policy questions and treat theory as a set of policies that need to be tested in the field (Termes et al., 2015). Developing a program ontology is a logic model that describes how elements of social reforms (planned activities and expected results) are related to each other in the process (Mertens & Wilson, 2019).

The EMO Theory of Change

Based on the secondary data, including the policy documents of the EMOs program (please see the details of documents at 1 and 2 in Table 2) and through consultations with policymakers and key informants of PPPs, we attempted to (re)construct the EMOs theory of change. We assumed the theoretical concept of NPM guides the development of a theory of change in the EMO program. NPM is a managerial approach borrowed from the market and applied in public policy, and is widely used in PPPs in education (Verger & Curran, 2014). PPP program through EMOs logic model based on NPM concept is given in Figure 3.

Figure 3 PPP-EMOs Theory of Change/Logic Model in Sindh Based on NPM
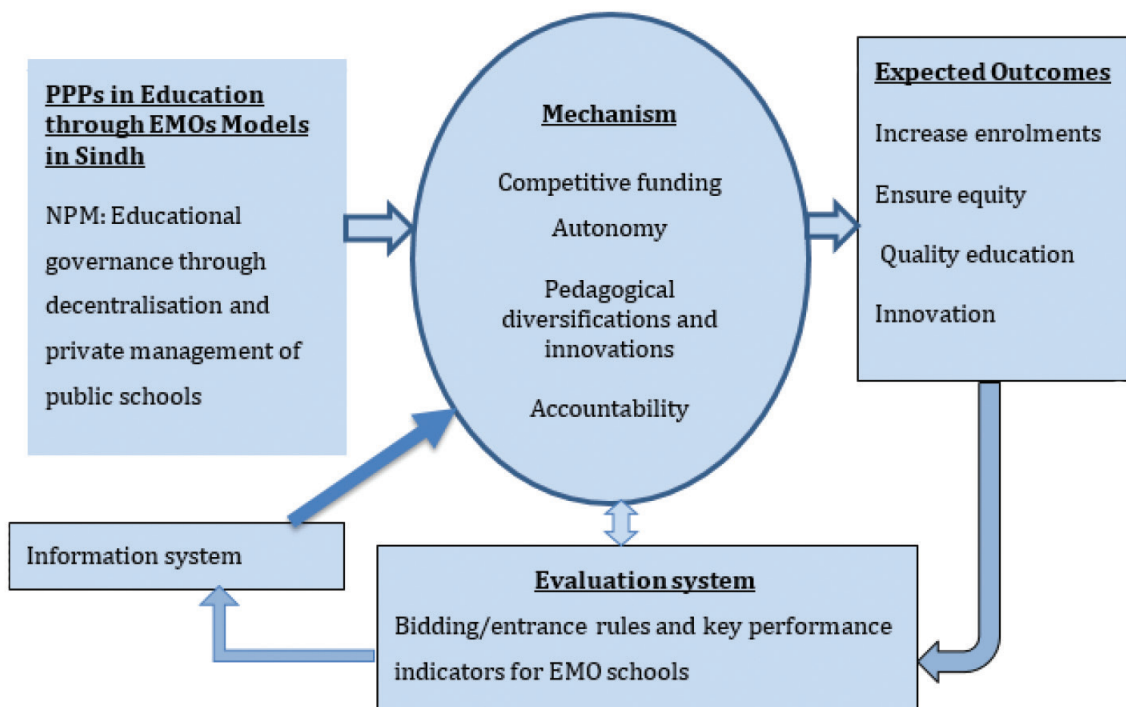
Source: The Government of Sindh, 2017: Termes et al., 2015.

Research Design

This study is a mixed-methods case study of the PPP-EMOs program in Sindh. According to Yin (2018), a mixed-methods case study is an empirical method compatible with evaluation research to investigate the real-world phenomenon contextually and in-depth. It likely takes a realist perspective, and in evaluation research, it triangulates multiple (i.e., quantitative and qualitative) sources of evidence. Furthermore, mixed methods offer a third research paradigm that can bridge the schism between qualitative (interpretive) and quantitative (falsification or confirmatory) research. In evaluating PPP-EMOs, we used quantitative data to see what works, and qualitative data to look at the context and mechanism that enable PPPs to be a success or failure.

Data and Sampling

To evaluate PPP-EMOs that address the questions of equitable access, quality, and efficiency in education, we, therefore, collected and analysed both quantitative and qualitative data of different stakeholders and participants. These included document reviews, secondary data sets, and interviews. We used secondary data collected from the PSLM survey, SEMIS, and SAT data for quantitative analysis. In the qualitative part, we used document reviews and interviews with key informants of EMOs based on convenient and representative sampling. Thus, in this study, we selected participants for interviews and FGDs based on a sample representing all stakeholders of PPP-EMOs. The details of data collection and participants are given in Table 2 below and the detail of participants is given in Appendix A.1.

Table 2: Techniques and Fieldwork of the Research Project

Sr No	Techniques	Fieldwork
1)	Document analysis of legal contracts and bidding processes	(a) PPP Guide and Toolkit by SELD and USAID (b) ADB Brief on EMOs in Sindh (c) National Education policy 2009 and 2017 (d) Sindh Education Sector Plan 2014-18 and 2019-21 (e) EMO bidding documents and contracts between SELD and EMOs
2)	Interviews with key informants (policy level)	5 semi-structured interviews: (a) 2 interview each policy developer from SELD (b) 2 interviews with donors (1 from USAID and one from ADB) (c) 1 Independent education expert
3)	Interviews with EMO operators	7 semi-structured interviews: 1 interview with each of the 7 EMO operators
8	Semi-structured interviews (in EMO schools)	14 semi-structured interviews: (a) 7 semi-structured interviews with 7 EMO Managers (b) 7 semi-structured interviews with 7 EMO school headteachers
9	Focus groups interviews (in EMO schools)	12 focus group interviews: (a) 6 teachers focus groups (2-4 teachers from each EMO school) (b) 6 parents focus group (2-3 parents from each EMO school)
10	Statistical analysis of SEMIS, SAT, and PSLM survey data	(a) SAT results of schools before and after EMOs and non-EMO schools within the same geographical areas. (b) SEMIS and PSLM survey data of districts: 7 districts where EMO schools operate

Source: Authors' compilations

Data Analysis

In realist evaluation, the development of a logic model or theory of change helps in data analysis which is based on CMO. The CMO configuring tool determines the relationship between input and output (Marchal et al., 2012). In qualitative data analysis, recorded interviews were transcribed and later translated. The interview transcripts and document analysis were coded in CMO themes that discuss the EMO initiatives' objectives, observed

outcomes, context, and mechanism of PPPs through EMOs. In quantitative analysis, we used the descriptive analysis tool to describe SAT, SEMIS, and PSLM data sets to examine the access, out-of-school and academic achievement differences between EMOs and other government schools. After analysing the above-mentioned multiple data sets in qualitative and quantitative formats, we concurrently integrated and triangulated qualitative and quantitative data and presented it based on the themes mentioned above (objectives) in the form of tables, charts, quotes for interpretations, and discussions.

4. FINDINGS AND DISCUSSION

The findings of this study are presented according to two broader themes and their sub-themes. These mainly addressed the research question(s), i.e., to what extent, how, in what way, and for whom PPP-EMOs improve access to education, ensure quality and equity education, and sustainability in the context of Sindh, Pakistan. The first broader theme highlights the findings relative to how PPP-EMOs in education are viewed in Sindh and how and through what mechanisms it is being implemented (i.e., perceptions and implementation). The second broader theme is regarding the PPP outcomes, i.e., the extent to which PPP models in education served to enhance access, quality, and equity in Sindh in achieving the SDGs and have been organised into a subtheme.

Evaluation of Educational Reform Policy through PPP-EMOs in Sindh

The main outcome of this theme was to broadly understand PPPs-EMOs and their governance mechanism in Sindh as perceived by various stakeholders.

Definition, Scope, and Objectives of PPPs in Education by Various Stakeholders

To unpack PPPs and their scope in education, we first explored the definition and understanding of PPPs at different stakeholder levels. According to Patrinos et al. (2009), PPP arrangements are different according to varying levels of government and private sector partnerships. Its definition and understanding are rooted in ideology, countries' economic policies, social values, and the role of IOs and donor agencies. As per the PPPs Guide and Tool Kit (SELD, 2017), the PPP in education is described as a framework where the government's role would be more of a regulator and policy developer, whereas the private sector's role would be to deliver service efficiently and effectively.

The role of donor agencies is significant in PPPs arrangement in the context of Sindh. The three main drivers of PPPs in Sindh, namely the World Bank, ADB, and USAID, also have different strategies. The World Bank pushes for more vouchers and low-cost subsidy types of schools in Sindh. On the other hand, ADB is investing more in secondary schools and building infrastructure. The USAID has primarily invested in the Sindh Basic Education Program. Under this scheme, they have supported drafting policies and funded establishing a school operated under the PPP mode by EMOs. In our interview with the donor who designed the PPP model in Sindh, it emerged that his response differed from the Sindh government's definition of PPPs. His understanding of PPPs in education was broader rather than technical support in education:

> I want to define PPPs [differently]. . . when [we] talk about PPP, people think infrastructure PPP, private finances to some groups of entity, get together and make consortium, to finance, construct, design, and operate big infrastructure road, high and railways… That's to be a very limited definition of PPPs. I worked with things like broader PPP: contracting schools, charter schools, voucher programs, and private management of public schools. At the limit, you can consider anything PPP. [In] EMOs we are financing in Sindh. Given that you can have any number of objectives of PPP: Access to quality, and relevant skills just depend on the situation.

The importance of PPPs is also being oversold (Verger, 2012), which aid agencies later realised as "PPPs is one strategy and ongoing process and not a panacea." It has been reported by donors that PPPs support the government to meet resource shortages through private sector participation. This way, additional support comes from communities, the private sector, and other regions. PPP reform allows the Sindh government to flex policies for private sector support. Along with donors, the Sindh government also reported that PPPs in education bring more resources, benchmarking, and accountability mechanisms.

Contrary to donors' perspectives, the logic and need of PPPs at the Sindh government level are viewed differently as one policy level person mentioned, "In PPPs, donor money is not a gift; instead it is a loan." The private sector brought its resources and investment. If the private sector brings, they could charge for services in the form of tuition fees, which is allowed in education. The government brings its resources and money, while donors help in policy design. Furthermore, they reported that the need for PPPs arose when the public sector ultimately failed to perform its duty. The government has to meet its obligation of offering quality education and increasing accessibility through better governance. In these instances, the role of the private sector was found essential to implementing educational governance. The private sector has an advantage because it has the power to fire those who do not work.

It was also reported that the PPP EMO concept has not been adequately translated and understood by the public. Spillane (2006) discussed that policy designed at the top level and not properly translated into administrative support and training often gets distorted and misunderstood. At the operational level, partners confessed they signed the contract and read monitoring and other accountability but still could not fully understand the agenda of PPPs in a long-term scenario. Few school operators suggested that this setup can work better if these schools are completely handed over to NGOs or private organisations and remove government teachers and staff because it is challenging to work with government-school teachers and get results. Contrarily, others believe complete handover will distort the idea of partnership in the PPP. It is also not fully understood at the top and the local level of the bureaucracy. The head of the PPP node reported that many bureaucrats and local-level administrators also create problems in governance; they feel government schools have been sold to the private sector. This shows that the ownership of PPP schools is still lacking at the government staff level. Beyond the above discussion on PPP policies and their contract complexities, there is a solid supporting voice at the school and community levels. They believe that the partnership model offers a unique opportunity to get services from prominent institutes and organisations, i.e., Sukkur IBA University and the Citizen foundation.

EMOs Model and Contextual Challenges

The current PPP-EMO model has some advantages but also creates many challenges as the model is designed and suggested by donors. Donor-driven policies, i.e., PPP Guide & Toolkit and Sindh Capacity Development Project are prepared under the USAID sponsorship through Sindh Basic Education Program. However, the Sindh government policymakers reported that these ideas of PPP-EMOs are indigenous compared to other PPP policies, i.e., the foundation schools. They claim that it is more vibrant and workable. Despite this, after five years of policy implementation, the Sindh government shifted from the oversimplification and panacea approach of PPP to greater contextualisation of the model. Similarly, the Sindh government also realised that the local understanding of any interventions as mentioned in The Sindh Education Sector Plan and Roadmap (SERP 2019-24):

> A clear understanding of where and why children are out of school will be instrumental in developing localised strategies. This is particularly important in implementing the SESP&R priority program addressing the challenge of gender parity in enrolment and retention. (p. 5).

It is reported that the Government of Sindh is not fully autonomous in designing and implementing PPP policies. Education funding still relies on external cash inflow by donor agencies, and they have their preferences. As one of the donors mentioned in our interview, "Obviously, the development partner has some role in financing and designing. For example, in the Philippines, we developed with the Philippine government. Ultimately the government is getting a loan; the loan has its design".

According to Patrinos et al. (2009), "A crucial component of any PPP in education is an effective strategic (as opposed to piecemeal or ad hoc) communication plan as this can substantially reduce political risk and be an effective way of promoting a PPP initiative" (p.57). The EMO model initially faced more challenges when the school was handed over to private school chains; a power struggle between the government and EMO staff sometimes resulted in clashes between staff on both sides. One reason reported is that private schools' governance seems different from government-funded schools in the way they deal with employees. As per our investigations not all (currently operating) EMOs understand the local contexts and capacity to navigate the nuances in in educational quality and equity. However, some (i.e., Sukkur IBA and The Citizen Foundation) have solid contextual understanding and extensive expertise in education policy implementation.

A large majority of teachers, parents, and local level administrators believe PPP can work better in rural areas where it is needed, where government reach is not possible. However, bringing PPPs intervention near government schools creates a sense of insecurity among teachers, leading to no ownership. They feel all better and well-funded schools are being handed over to private parties. There should be clarity in the PPP model. Not all organisations are entering the field with a philanthropist approach or goal to serve and support the government in education; sometimes, profit is also their motive. Increasing the private sector's interest also raises doubts among the public and policy experts that EMOs in PPPs contracts earn profits on public money.

EMOs selection Process: Supply and Demand Mechanism

As per our investigation, the motivation to run schools is largely based on the supply side, depending on the government's incentives. The NEP 2009 and 2017 and policy documents of the Sindh government also seek the support of the private sector. The government realised the role of NGOs and community-based organisations is crucial and planned to support these organisations through various ways various, i.e., tax exemption, subsidy, and capacity building. It has been revealed by donors such as ADB:

> One of the reasons for using EMOs is that SELD cannot run hundreds of new secondary schools, so they cannot staff them, support them, and keep them running. Therefore, EMO is a good model to use for the existing civil society or the private sector companies to manage schools.

The motivation for private organisations also varies. Some social organisations or NGOs claim that their motivation is to serve the community; some private school chains claim that they want to enlarge their activities, diversify their school systems, and ensure quality education. It is a win-win for both parties because the government gets better services and the private sector earns reputation and revenue. Another reason for motivation is that NGOs were already working or thinking to diversify their work toward education, as the government, USAID, and ADB have already constructed buildings. Therefore, they became ready to embark on this established building. It was less challenging for them to enter than building new infrastructure. The USAID and the Government of Sindh also realised that they should continue their services in the social sector; they are being incentivised to manage schools.

In the school selection process, the PPP-EMO model has a somewhat clear policy and competitive bidding process than foundation schools in Sindh. Their award is based on technical and financial proposal evaluation, which has been carefully designed. This practice has been reported to bring the best out of organisations. In EMOs, the Concession Agreement of PPPs clearly mentions bringing industry practices into the education sector. There are key performance indicators (KPIs)[2] that enable an environment of accountability. Independent educational experts' auditors evaluate the KPIs and ensure financial transparency. It has legal certainty, institutional arrangement, fairness, transparency, competition, contract sanctity, mutual support, and supplementary financing arrangement (SELD, 2017).

There are also some critical aspects of this model. It has been reported that in the PPP policy board of EMOs, many non-educator consultants work for education. They have a limited understanding of the complexities of learning and how to improve educational outcomes. Moreover, many private sector organisations are mushrooming in education as EMOs; they have limited expertise in education, and their team is also naive. It has been reported they are good at manipulation and outsourcing proposal writing. These manipulative tools enable them to enter the market, which is also a matter of concern. Furthermore, the PPP node at the government level is intensely bureaucratic, which contradicts the objectives of innovation.

The school contracts need incentive mechanisms beyond monetary rewards for bringing innovation. Also, selecting schools only based on monetary aspects has many disadvantages. As expressed by one of the policies implementors of PPP-EMOs:

> In my opinion, PPP should be more flexible [in awarding schools]. At the end of the term, a lot of organisations came to their technical proposal were strong; it's hurtful they lost because of the monetary aspect, as the lowest bidder won.

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[2] The KPIs for EMOs are given in Appendix B

There is more evidence that the competitive bidding mechanism is creating issues. Many believe school selection based on competitive bidding compromises quality and equity. It is very difficult for the lowest bidder to ensure libraries and labs, and concentrate more on disadvantaged kids. These issues make EMOs less innovative in solving problems.

Governance through Decentralisation, Autonomy, Competition, and Accountability

There is no doubt that the poor governance of public schools in Sindh gives a comparative advantage to PPP schools. The reasons are not simple but embedded in the social and political structure of the country. It has been reported that in the government sector, many primary schools were established based on political motivations to appease constituents. School financing is also uniform in most cases due to which some schools remain disadvantaged because of the large number of kids and teachers. There is no mechanism to generate funds swiftly and hire teachers based on need. School headteachers and local administrators are not empowered to tackle these issues. As one government official at the policy implementation level mentioned:

> In many schools, one can find a large number of kids but very few teachers. On the other hand, one can also find a dozen of teachers but less than a hundred kids. We do not utilise the budget properly. In some schools, there are many teachers and fewer students and vice versa.

Autonomy and accountability

Commonly, government schools lack good governance and accountability mechanisms due to their centralised educational administration. On the other hand, through PPP mode, they apply the concept of NPM. The NPM mechanism based on decentralisation, school accountability, and incentive-based performance yields better output (Wilkins et al., 2019). It has been reported that due to decentralisation, decision-making on teachers' hiring, remunerating, and firing process is swift and better outcomes could be achieved. It also can make pedagogical innovation and finance different units easily. According to the PPP documents of the Sindh government, in PPP mode, NGOs and community-based organisations are encouraged by sharing the power of administration. They play a crucial role in supporting the government agenda by managing government schools. Compared to government schools, PPP schools are more empowered as one EMO operator mentioned, "We have power, resources, and budget so we can improve schools . . ."

In most PPP schools, the administrative process is easy and meet parents' expectation. During the admission process, PPP school administrators and parents showed satisfaction in taking care of students' records and cross-checking certificates and other issues when needed. There is also a follow-up of students' records. Government schools show relatively more bureaucratic processes; in those cases, many kids of poor and uneducated parents discontinue their schooling.

There is an advantage in the new governance of PPP because of its cluster model in which the management of surrounding primary, elementary, and high schools will be given to one school that would be called a hub. The cluster and consolidation policy may help to get a positive output from PPP as mentioned in SESP 2019-24. A larger hub of schools would provide facilities through the management and pedagogical support to satellite schools. This also includes cluster-based teachers' continuous professional development and quality assurance. Though this idea is still in the initial stage, this model seems to have more potential for decentralisation and non-bureaucratic management.

There is more accountability in privately managed schools compared to government schools. However, UNESCO (2017) suggests that accountability should be beyond indicators such as students' report cards and penalizing schools by reducing their funds. It should be holistic, including supporting schools in resources and community ownership of schools.

Competition, differentiation, and innovation

The NPM in education claims that diversification and differentiation in schools create an environment of

competition and innovation (Verger and Curran, 2014). As the PPP document of Sindh claims and hopes, new types and models bring new practices and pedagogical innovation. As per the evidence we collected, some schools or organisations (who have extensive school management experiences i.e., Sukkur IBA and TCF) had competitive advantages and offered very effective training and professional development relevant to their classroom effectiveness. However, the market approach to the competition itself distracts innovation. It has been reported that innovation is more tied to collaboration to solve chronic issues rather than creating competition. Another critical aspect of PPPs as revealed by some participants was that education is being handed over to non-educationists, who only bring cosmetic changes rather than radical ones. Though EMOs offer a conducive learning environment due to their enough funding, no pedagogical innovation was found to solve poor quality issues and ensure equity in challenging areas. Only standardisation and ranking of schools increased, which is the byproduct of the market-based approach to education (Steiner-Khamsi, 2016). Furthermore, in the name of innovation and competition, schools have created a manipulative environment in the education system, where private school owners and PPP operators attract parents and families by showcasing and focusing more on the English language. This practice also undermines the local languages.

Monitoring and Evaluation

PPP policy experts and implementing agencies believe that in Sindh, and generally, in Pakistan, there is an enormous inefficiency and a lack of monitoring. In conventional government schools, a large number of teachers are ghosts, who have political backing, and the government can't make them accountable. As reported by a participant "In many of the cases, the appointed teachers are somebody influential's relatives; whatever their qualification, they got appointed." In a government setup, there are many constraints to firing teachers who do not perform. There is also less chance for deserving employees to grow based on performance. As a result, the government system will not yield adequate educational outcomes. There are also several political and legal challenges, which nobody wants to touch. Therefore, the PPP has advantages as narrated by one of the policymakers:

> It is very difficult to operate in such regulatory environments; there are huge constraints on teacher hiring or firing [in a government set-up]. One of the difficulties is hiring qualified staff and paying them well. The PPP gives a chance to manoeuvre around it.

Therefore, the PPP has a relative advantage as partners' performance is aligned with educational quality and access, and there is a specific monitoring system that ensures accountability. In the PPP, if teachers do not show up, they can be fired easily. As one policy developer elaborated, "there is accountability. It is a hope [to] bring better management skills in the education sector. It is also about trying to pay what you need to pay." In the EMO-PPP model, schools' monitoring and evaluations are enlisted based on KPIs outlined in the PPP document.

There is also adequate criticism of the monitoring of the PPP model in Sindh despite SELD and USAID's added condition of independent experts and audits who monitor and evaluate. As per our investigations, most experts lacked rigorous educational knowledge and experience. These consultants were mostly hired on ad-hoc bases. Steiner-Khamsi et al.'s (2016) perspective for ensuring quality and equity in education is narrow. The existing monitoring system is well-suited for ensuring infrastructure and facilities. However, they lack the capacity to investigate and ensure the core aspects of education, i.e., access, quality, and equity. It has been emphasised the government should add more credible educational institutes in monitoring and evaluation, that continuously evaluate based on research and evidence-based information. Compared to Sindh, Punjab has introduced real-time monitoring for all schools, which has improved students' and teachers' availability through better use of technology (The Government of Punjab, 2022). Another issue in monitoring is that PPP contracts have a lot of grey areas. Many EMO partners believe these KPIs are somehow ambiguous and contradictory. For example, the KPI of increasing student enrollment is difficult as the schools are already at full capacity because schools have nice buildings and resources, which attracts kids from other schools. KPIs such as community engagement and capacity building can be manipulated by fake reporting, and their impact cannot be monitored through self-reporting by private partners. Moreover, organisations that have links with bureaucracy and have a better working relationship with the government can take advantage easily.

Teacher Hiring Mechanism, Remuneration, and Security

In Sindh, there is a teachers' recruitment policy for government schools, which is uniform for everyone based on specific criteria. Teachers' recruitment is centrally administered through an open advertisement, which is a long process. However, in the PPP model, including EMOs, this structure is entirely different; they hire locally, based on their needs. In this model, higher qualifications and teacher certification do not matter, and the process is much quicker. As reported, for instance, if they need a teacher for maths, they can complete the recruitment process in days. Even if they do not have a budget, they can hire a volunteer. In PPP documents, there is no specific guideline for teachers' recruitment. The lack of framework and mechanism also raises questions on ensuring teachers' commitment and proper regulation in the private sector as per the labour laws. The salary of government-school teachers is many times the salary of the private sector teachers. We found that except for Sukkur IBA, the rest of the EMO teachers' salary is very low. This is why only leftover teachers get jobs in PPP schools, and all teachers desire government jobs.

A big concern being raised regarding the PPP model is that of lower salaries and job security of teachers. They are being hired based on simple contracts. Afridi (2018) reported that the PPP mode adds less qualified and low-paid teachers to the Pakistani system, compromising education quality and violating labour laws. It is a common perception among all teachers that the government set-up is more favourable for teachers, and in the PPP model, teachers are more vulnerable and insecure. Many teachers shared their stories in which told that they are local, and are looking for some experience and salary to survive, which PPP schools offer. They said if they get another opportunity, they will leave. It is also a common feeling among all kinds of teachers that in the future the PPP mode will further encroach on teachers' rights and there would be more pressure on teachers to show performance. They further expressed the concern that they will not be fairly compensated.

Financing, Efficiency, and Equity

Educational financing in Pakistan and Sindh is quite inefficient and unfair. Most of the school financing in the government sector is uniform or based on the number of students or special grants/funds approved through political patronage. Due to a lack of systematic and equitable financing, a considerable budget goes underutilised. According to NEP 2009 estimates, funds ranging between 20% to 30% of allocated funds remain unutilised (MoE, 2009). The option of PPP is considered to regain trust in education and to make true educational goals. It is claimed that the PPP is an innovative model, and the EMO model may attract better education organisations.

As per the analysis of PPP documents, EMOs also have a more bureaucratic bidding process as requests for proposals and then selecting organisations take a long time. The lowest financial bidding mechanism can compromise quality and manipulate the system. The EMO model is comparatively more costly than government schools and even many times the foundation model of PPP. The policy document creates another inequality. As per the document, international partner organisations have a higher bidding range than local partner organisations. The implication can be reflected in schools' output and disparity in student quality.

The PPP model claims that the current design offers equity in education. However, based on our investigation, we found many loopholes. There is no incentive or extra support for students with disabilities or additional support for teachers and staff who address these challenges. It has been suggested by various policymakers that more equitable funds transfer in PPP could be through targeted vouchers, which has been suggested for Sindh. Allocating more vouchers to girls' education or paying more funding to schools that enrol more students with a specific poverty score can ensure equity.

Community Participation

In our interview process, we found that donors and other policy-level persons believe that in a PPP-EMO set-up, with community support, there is a possibility to pool resources from donors, government, and community, which has been successful in several countries. We also found that the involvement of the community and participation of parents is essential in bringing out-of-school children and ensuring quality education. It has been confessed that although there are excellent people in the government, they could not perform due to a lack of

coordination with the community. Another factor in the absence of democratic participation of the community is that there is a vast disparity in education in Pakistan. Most middle-class and affluent parents send their kids to private schools, so their interest is relatively low or negligible in government and government-subsidised free schools (Rashid et al., 2015). An increasing number of private schools has also reduced parents' trust in the government. As accountability from the parental side is reduced, government schools are losing their quality continuously.

It is also claimed that bureaucracy does not care about parents' and community's wishes in the government sector. The private sector is more task-oriented, and without community participation, it cannot fulfil educational tasks and objectives. Therefore, the PPP model is well-suited to community participation. In the PPP design of EMOs, there is a community mobilisation unit, and community involvement is one of their KPIs. It has been confirmed by various stakeholders the level of community involvement, and trust increased in the EMO set-up.

The blind spot of this set-up is that these mobilisations are funded and based on short-term goals. Among many PPP operators, these are considered less sustainable because it is a one-sided push or drive that creates less bonding. Therefore, the push should be mutual. There is also a criticism of the PPP model that this model lacks democratic governance of schools, and parents and the community are not empowered enough to hold schools accountable. In a PPP contract, the government and private parties are directly involved and are signatories. The role of the community is not legally and contractually guaranteed, so, in many cases, the parents' and the community's role is passive and taken for granted. Although many parents and school administrators mentioned that this model has increased parents' visits to the school, still, their visits do not fully hold the operator accountable as most of the school's decisions are taken by the operator and governments. EMOs have their identity, power, and influence, and parents have no legal or social power. In designing education policies, policies are never discussed at the bottom level, parents' voices are never heard, and even teachers feel surprised when new policies are implemented.

PPP-EMOs for Access to Equitable quality Education, and its Sustainability

The broad objective of this central theme is to discuss the findings regarding the role of PPPs in achieving educational goals of access, quality, equity, and sustainability in Sindh.

Access and Equity in Education

The primary rationale for PPPs in education is to expand schooling in marginalised areas and improve educational outcomes (SELD, 2017). The inability of the government to add more post-primary schools and open new schools with an increasing population causes a huge gap in achieving the objective of access to education. It has been realised that the main reason for dropping out is that initially Sindh government only targeted opening primary schools through PPP mode supported by the SEF. Currently, in Sindh, there are 45,447 public schools, out of which 41,131 schools, i.e., 91%, are primary schools. There are 12 million children aged 5-16 years in the province, out of which 6.67 million (approximately 56%) are out of school (SELD, 2017).

It has been reported that by learning lessons from a smaller number of middle and secondary schools, the PPP mode also reformed itself to focus more on post-primary education. It is hoped that current PPPs through EMOs can help to build and increase access and ensure proper schooling requirements. Although the EMO model of PPP shows some achievement in increasing access, more considerable impact is still far behind. Table 3 below shows an increase in access due to EMOs.

Table 3: Student Enrollment and Attendance

EMOs	No of Schools	Enrollment				Attendance			
		Baseline		Current		Baseline		Current	
		Girls	Boys	Girls	Boys	Girls	Boys	Girls	Boys
Beacon House	1	0	373	119	393	0	66%	96%	92%
CfC	14	2,331	5,472	3,417	6,608	59%	61%	100%	100%

HANDS	3	179	742	378	1,039	43%	58%	77%	79%
Sukkur IBA	10	704	1,616	1,048	1,940	58%	69%	56%	NR[3]
IRC	4	649	2,073	754	2,366	25%	52%	57%	64%
SRCO	2	123	430	164	489	61%	65%	71%	70.50%
TCF	19	5,701		6,116		NR			71%
Total	53	20,390		24,831					

Source: Data collected from the PPP node of the Sindh government based on the report of 2020-21

The impact of education reform cannot be viewed in isolation. As SELD (2017) claimed, PPP-EMOs will largely address bringing out-of-school children to increase post-primary enrollment in selected districts. Based on our analysis of the SEMIS data of Sindh and PSLM surveys of these selected districts, the EMO model so far has not been able to address the larger goal of the educational access issue. Table 4 and Table 5 below highlight the picture of EMOs districts before and after EMO interventions.

Table 4: Schools Monitoring Report of Selected Districts Before EMOs Intervention 2014-15

Districts	Students' enrollment		Total enrollment gender-wise			Primary completion rate			STR[4]	OSC[5]
	Primary+ pre-primary	Post-primary	Boys	Girls	Total	Boys	Girls	Total		
Khairpur	222,377	88,530	192,119	118,784	310,903	61	47	54	34	55
Sukkur	110,690	43,348	95,092	58,946	154,038	53	38	46	30	47
Larkana	154,196	101,730	128,924	90,002	218,926	73	60	67	31	50
Kamber-Shahdadkot	129,848	42,121	105,785	66,184	171,969	60	49	55	31	71
Dadu	189,381	48,299	140,520	97,160	237,680	68	61	65	35	42

Table 5: Schools Monitoring Report of Selected Districts After EMOs Intervention 2019-20

Districts	Students' enrollment		Total enrollment gender-wise			Primary completion rate			STR	OSC
	Primary+pre-primary	Post-primary	Boys	Girls	Total	Boys	Girls	Total		
Khairpur	258,258	92,353	217,215	133,396	350,616	49	25	38	39	48
Sukkur	135,585	50,654	112,273	73,966	186,239	77	68	73	41	48
Larkana	192,352	73,623	152,861	113,114	265,975	54	42	48	38	56
Kamber-Shahdadkot	148,549	50,402	119,194	79,757	198,951	51	35	44	39	46
Dadu	173,952	58,201	141,682	90,471	232,153	69	54	62	38	40

Sources: Authors compilation based on SEMIS Sindh and PSLM survey 2014-15 to 2019-20 data

It was reported in interviews that PPP-EMOs have limitations to increasing access because this model is quite costly, and the number of schools is relatively low as the current number is about 100. In EMOs, a school can accommodate a certain number of students. This has also created an environment of admission tests, excluding some kids from accessing quality education. Against the requirement of KPI, most of the EMO operators responded that they do not go for admission drives because the capacity in their schools is already full. The right design and regulatory framework of PPP can also motivate students and parents to remain in touch with schools

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[3] NR = Not reported

[4] STR refers to the student-teacher ratio, calculated based on the number of students per teacher

[5] OSC refers to the rate of out of school children at the age of (4-16), as per the given data PSLM survey (2014-15) and (2019-20)

and increase students' attendance. The foundation school model and targeted vouchers have been able to bring out-of-school children to schools as they incentivise the stakeholders to bring children into schools.

Educational equity is a big concern and a serious challenge in Pakistan. As NEP 2009 (MoE, 2009) mentioned:

> The educational system in Pakistan is accused of strengthening the existing inequitable social structure as very few people from the public sector educational institutions could move up the ladder of social mobility. If immediate attention is not paid to reducing social exclusion and moving towards inclusive development in Pakistan, the country can face unprecedented social upheavals.

In order to increase the participation of children from disadvantaged and hard areas, the PPP model lacks a special mechanism or design. In Sindh, within districts, some villages are better than others. In some places there is tribal system, some people feel more secure and interested, and others are apathetic toward education. Special provisions and targeted incentives can bring children to schooling from challenging areas. It was also reported that the current uniform policy of admission and schooling hardly addresses the problem of those parents who are continuously migrating for livelihood. Though the PPP model has some advantages in retaining children but fails to address those children who dropped out of school because of a poor academic base, poverty, and child labour. The local partner suggested that there should be a remedial education in the PPP model along with an incentive or stipend for those students.

Based on our interviews with parents and teachers, we found that PPP schools are more attractive for girls. Parents feel more secure sending their girls to these schools as more female teachers are recruited based on convenience and need, which also win parents' trust. However, educational inequalities are mostly based on social and economic factors. The increasing role of non-state actors and the PPP model in education exacerbate inequity (Afridi, 2018). Due to the nature of the PPP model being more market-centric, it incentivises operators to select more able-bodied students. When we inquired from the operators, they all believed in equity. Still, they felt the system would not support students with different needs because schools do not have specialised staff and supporting material and incentives.

Quality Education

Another objective of PPP in education is to ensure quality education. The Sindh government has planned in SERP 2019-24 to increase the quality of education through upgrading educational facilities, adding more qualified teachers, and inclusive education. As narrated by a PPP director, "PPP model was adopted because government schools' quality was not improving, the lack of specialised teachers and teacher absenteeism." The autonomy of schools through PPP offers a good opportunity to ensure quality. Though PPP schools offer some level of better-quality perception due to accountability, it has created a huge difference in quality based on different management of schools. Some PPP schools (i.e., Sukkur IBA and TCF) perform extraordinarily well, while others perform relatively poorly. This difference is because some organisations have a comparative advantage in operating schools. For instance, Sukkur IBA is already managing schools for the last two decades and has a strong team of educational experts and teachers compared to local NGOs who have limited capacity and teams. Poor regulations, more competition, and standardised assessment in PPPs are to for less inclusiveness and differences in quality. The current types of schooling and segregated quality assurance mechanisms also aggravate segregation and less collaboration (Lubienski, 2003).

Educational standards and assessments are also complex and mean different things to different stakeholders, i.e., teachers, parents, and administrators. For example, some believe quality education is if students perform well as per their syllabus, while others think that students should have better result cards. Many teachers disclosed another challenge, which is that in some PPP schools, children have different levels based on their educational history and huge disruption in schooling. It is challenging to ensure better quality education and learning without addressing their learning deficiencies and proper support from organisations. The current debate on quality education is never concerned with students' physical and mental growth, better communication of local languages, and solving complex social problems.

A significant factor to gauge quality is the annual assessment based on large-scale examinations and

standardised tests. This is a more outcome-based approach to ensuring and assessing quality education. It was reported that a major flaw in this approach is that it is not fair to compare schools in far-flung areas with schools in urban advantaged areas. Students with low socio-economic status are always portrayed as low achievers. Educational quality should not be limited to test scores but should include student participation, learning life skills, ensuring better availability of infrastructure and labs, and well-qualified teachers, which comes with the approach of input-based quality assurance (Steinner-Khamsi, 2016). Most unbiased stakeholders believe that overall quality education is the same in government schools and PPP schools. Comparatively, PPP schools have better governance and management, which reduce students' and teachers' absence. On the other hand, PPP schools' teachers are less qualified and low-paid and cannot teach advanced courses adequately. The Sindh Student Achievement Test (SAT) results (see Figure 4, Figure 5, Figure 6, and Figure 7.) also show that there is no significant difference in the achievement of EMO schools and government schools of the same region (Figure 4 and Figure 5), and between EMO schools before and after EMO interventions (Figure 5 and Figure 6).
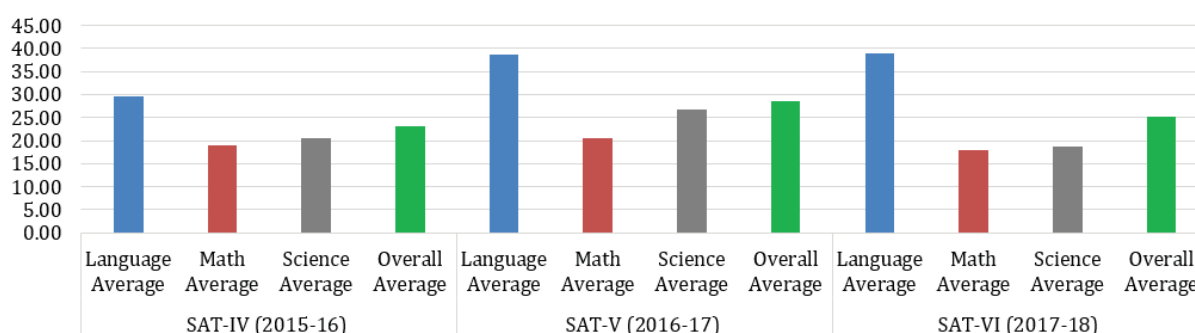
Figure 4: SAT Results of EMO Schools in Selected Districts

Figure 5: SAT result of Non-EMO Schools in Selected Districts[6]
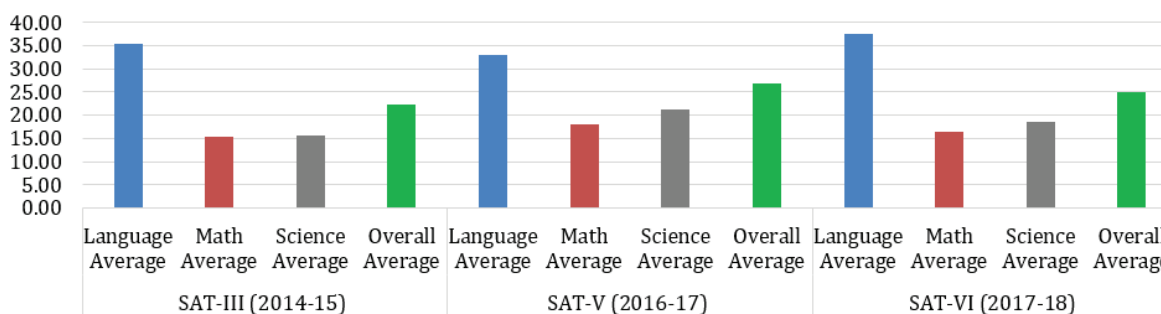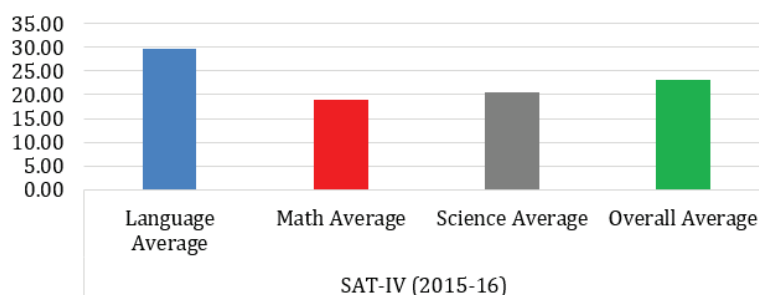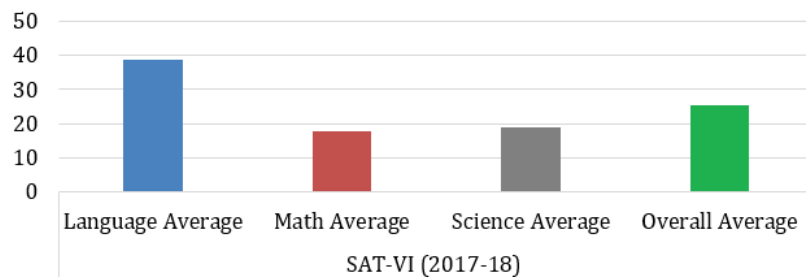

Figure 6: SAT Results of Schools Before EMOs Interventions

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[6] Selection criteria of non-EMO schools in SAT analysis were based on nearby non-EMO (government) schools in the same union council or tehsil.

Figure 7: SAT Results of Schools After EMOs Interventions

Source: Authors' compilation based on the analysis of SAT Sindh results

Sustainability of PPP-EMOs in Sindh

Though PPPs in education are currently increasing in Sindh and Pakistan due to the UN's demand for access to education and external forces such as donor agencies, there is also a big concern about its sustainability among stakeholders. In the EMO model, schools are handed over to organisations for a 10-year contract period as per the requirement of USAID and the ADB. These schools will learn from the process and will be sustained based on government funding. Many EMO operators and stakeholders show concern that as the government bureaucracy and administration processes are outdated and corrupt, schools will struggle to survive. There are myriad examples in Sindh where schools supported for a short term by donors schools closed down, or are performing poorly after the support was pulled out.

It was reported that the sustainability of PPPs can be retained if these schools' financing is guaranteed. There should be a financial endowment with a proper plan. Also, there should be a board of governance composed of local experts and school staff, who should be continually trained. Once organisations pull out, the school can be run and pay teachers and staff through the endowment and continuous government and community support.

It was also reported that PPP schools cannot fill the government schools' system gap. This may lead to more waste of resources by building an entirely new system. There is no evidence of the complete success of the PPP model (Verger et al., 2020). Rather than opening PPP schools everywhere, the Sindh government is planning to open them in targeted areas where government machinery cannot work properly or is difficult for the government to reach. The collected data revealed that there are also negative externalities of the current EMOs for other public schools. As per the views of teachers and school administrators, due to a better perception of the performance of PPP schools, there is pressure from parents to pull out their children from government schools to send them to PPP schools.

As the objective of PPPs is to be a helping hand to the government, their role should be more supportive of government schools based on the cluster school model. This will increase collaboration among schools through better teacher professional development to achieve the same goals.

5. CONCLUSION

The PPP-EMOs model is claimed to be a relatively more systematised model of PPPs in Sindh, which mainly focuses on post-primary education. Its better funding and large investment in infrastructure have created a better perception of the learning environment. However, due to donors' design and investment, its policies and objectives are not fully realised, which creates several contextual challenges. Compared to government schools, generally, PPP schools offer better governance, including administration, monitoring, and accountability mechanism. It succeeded in ensuring teachers' and students' attendance but does not show any significant improvements in terms of equitable learning for the students. The selection of EMOs through competitive bidding ensures transparency. However, the selection of the lowest bid proposals and loose (educational expertise) criteria ended up in the emergence of low-quality organisations. Those EMOs that have extensive educational management expertise and better incentive mechanisms for managers and teachers offer relatively

better outcomes compared to NGOs that have limited scope in education policy implementation. Overall, the existing EMOs fall short of addressing the broader issues in education, i.e., accessibility, quality, and equity. Compared to FAS, EMOs are in limited numbers and are a relatively expensive intervention. Moreover, this reform might not be replicated in the entire Sindh because of financial, legal, and other constraints. After donors' withdrawal, its sustainability would also be a real challenge. Moreover, PPPs are not a silver bullet for education reform. However, developing and sustaining better PPP models depends on the government policies recommended beyond the interventionist or piecemeal reforms on a limited scale. It needs to be based on the supply and demand mechanism, innovative and equitable financing, and the optimal use of resources. The analysis of the collected evidence revealed that a more targeted model of PPPs, need-based funding, and incentives can help to bring out school children from disadvantaged areas and increase girls' education. School decentralisation and accountability must relate to the democratic governance of schools. The PPP contracts between the government and private sector must not ignore important stakeholders such as the community and teachers.

6. RECOMMENDATIONS

Our policy recommendations are based on a realist evaluation of PPP-EMOs. We found that PPPs are neither entirely efficient and effective nor a complete failure. We found that PPPs in education can be evaluated based on their merit. Similarly, we found that PPPs are not a panacea for everything that ails education. Moreover, PPPs are not a reason for the government to withdraw from its responsibilities. Following are some policy recommendations for education reforms, including PPPs.

Right Design of PPP policies

The ultimate effect of PPP depends on a policy design that ensures quality and equity. Huge investment in infrastructure and better funding attracts private partners, but it also constrains resources to scale up the model. There should be a better regulatory approach in PPP, and it should be clear so that the children from disadvantaged communities are prioritised. The opening of schools should be based on socio-economic conditions, where more incentives and subsidies are to be allocated to the area where socio-economic conditions have deteriorated. Targeted vouchers or subsidies are recommended, which especially focus on disadvantaged areas. Most of the schools located in underprivileged areas are underperforming due to the unavailability of quality teachers and challenging conditions. There is no supportive funding and incentives in the current PPP mechanism. There should be supplementary funding (including incentives for teachers) for schools that belong to the disadvantaged area. The government must create a solid framework for creating a partnership and the objective of educational operation and funding strategies. The donor money and policy recommendations should also be better negotiated while applying the contextualised framework.

Education Accountability and Regulation

It is an accepted premise that market forces and non-state actors have a certain educational agenda, so their approach is limited. There should be a more balanced approach to educational accountability, which also includes the input-based mechanism (i.e., supportive resources and quality teachers) along with outcome-oriented and standardised assessment. The students' learning achievements are more complex and personalised, so these should be treated separately from other dimensions (i.e., availability of infrastructure and teachers etc.) of the KPIs. The monitoring and evaluation mechanism of students' achievements and progress tracking should be done through a panel of educational experts who have extensive research and practice-based experiences in the field. School regulations should be supportive and fair, and all kinds of bureaucratic hurdles should be removed. Also, there should be minimum criteria for teacher and staff recruitment, their qualifications, and the payment process. There should be more democratic accountability and governance of schools where the role of parents should be alleviated.

Different PPPs should be under one Umbrella/System.

In Sindh, there are various models of PPPs operating and proliferating. However, there are two major forms of PPPs, i.e., FAS and EMOs, in the K-12 education system. It is recommended that all PPPs be under one system to increase synergy and reduce inequitable funding and regulations of schools. This approach also reduces segregation and stratification of schools, students, and teachers. The best possible way to get collaboration among schools is through a cluster-owned system, where nearby schools are managed by a hub school irrespective of their provision (either public or private). As per UNESCO's (2017) recommendations, the government needs to see all schools, students, and teachers as part of a single system. Furthermore, different donors and PPP actors work together and acknowledge each other's work. So, the role of government should be to streamline policies, rather than acting in bits and pieces.

Availability of Robust Data

The evidence relating to the impact of PPPs, regulatory measures, PPPs performance in a particular context, and education providers' behaviour is still scarce. There is a concern at many stakeholders' levels that currently available data on students' enrolment and assessment (based on local exams) are unreliable. The data on private schools is based on estimates, and the same student is enrolled in a government school and a private school. The data collected by the World Bank and UNESCO is also based on administrative, which is collected hastily. Designing policies on inauthentic data do not help in developing better strategies. Therefore, the Sindh government needs to streamline all types of schools and adequately manage the data with the help of technology.

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APPENDIX A

Table A.1

Details of the Research Participants

Sr. No	Research Participants	No	Description
1.	EMO Policy Makers/Key Informants	05	02 Participants from SELD-GoS[7] 02 participants from USAID 01 participant from ADB 01 participant as an independent expert
2.	EMO Operators	07	01 participant each from the following EMOs SIBAU[8], TCF[9], IRC[10], SRSO[11], CFC[12], HANDS, and BHSS[13]
3.	EMO School Managers	06	01 participant each from the following EMOs[14] SIBAU, TCF, IRC, SRSO, CFC, HANDS
4.	Head Teachers	07	01 participant each from the following EMOs SIBAU, TCF, IRC, SRSO, CFC, HANDS, and BHSS
5.	Teachers	06 FGDs	01 FGDs[15] each from the following EMOs SIBAU, IRC, SRSO, CFC, HANDS, and BHSS
6.	Parents	06 FGDs	01 FGDs[16] each from the following EMOs SIBAU, IRC, SRSO, CFC, HANDS, and BHSS

Source: Authors compilations.

Table A.2

Research Participant Code and Description

S. No	Participant Code	Code Description	S. No	Participant Code	Code Description
1.	PD	Policy Developer	4	HT	Head Teacher
2.	O	Operator	5	T	Teacher
3.	SM	School Manager	6	P	Parent

Table A.3

Research Participants' Profile

S. No	Participant Code	Gender	Academic & Professional Qualification	Professional Experience	Experience in Organisations
1.	PD1	Male	NA	20 years	Various positions in SELD[1]
2.	PD2	Male	PhD (in progress) Bachelor in Anthropology & Geography MA Sociology Masters Anthropology	NA	AKU-EB[2,] SEF[3,] City School World Bank, SELD
3.	PD3	Female	PhD (Edu: Leadership and Management) MA Economics MBA (Finance)	NA	Bank, City School, British Council, IRC[4]

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[7] Sindh School Education and Literacy Department, Government of Sindh

[8] Sukkur IBA University

[9] The Citizen Foundation

[10] Indus Resource Center

[11] Sindh Rural Support Organisation

[12] Charter for Compassion

[13] Beaconhouse School System

[14] The BHSS has no school manager

[15] The data file of TCF has been corrupted

[16] The parents of TCF school did not show up

4.	PD4	Male	PhD in progress Graduate degree in sustainable development	25 Years	Asian Development Bank
5.	PD5	Male	Master Degree	NA	US Consulate
6.	PD6	Male	Master's in philosophy Master in Social development	NA	USAID
7.	O1	Female	MBA Degree in Policy	15 years	CfC[5]
8.	O2	Male	PhD in progress MA Economics M.Ed.	30 years	Various public and private organisations
9.	O3	Female	MA Economics	30 years	NIPA[6] AKU IRC
10.	O4	Female	MBA BE M.Ed.	30 years	IRC Pak Public Development Society Baluchistan Pakistan Women Lawyer Association HANDs
11.	O5	Male	NA	10+ year	SEF USAID Beaconhouse & Various organisations
12.	O6	Male	Post-graduation International Relations & sociology	10 years	SEF IRC Right to play Pakistan SRSO[7]
13.	O7	Female	MA English B.Ed		Rohri Cements Works High School Rotary International School Pakistan-America Cultural Center
14.	SM1	Male	MBA	NA	Various organisations
15.	SM2	Male	MA Sociology B.Ed	8 years	IRC HANDs & Various organisations
16.	SM3	Male	M.Sc Computer Science MA Sociology	15	IRC SRSO & Various organisations
17.	SM4	Male	MA sociology BBA	11 years	IRC & Various organisations
18.	SM5	Male	Graduation	NA	CfC & Various organisations
19.	SM6	Male	MA Public Administration B.Com	5 years	Various Schools
20.	HT1	Female	M.A, M.Ed	20 years	SELD
21.	HT2	Male	MSc, M.ed	20 years	SELD
22..	HT3	Male	Mphil (In progress) B.Sc Hons, M.Sc M.Ed, B.Ed	32 years	SELD
23.	HT4	Male	NA	36 years	SELD
24.	HT5	Male	M.A, B.Sc Mathematics M.Ed	32 years	SELD
25.	HT6	Male	BSc M.Ed, B.Ed	32 years	SELD

26.	HT7		M.phil (In progress)	5 years	Beaconhouse SEF
27.	T*	***			
28.	P**	***			

Source: Authors compilations.

*Teacher: Generally, government teachers hold Masters, B. Ed and M.Ed. degrees having more than ten years of experience. However, EMOs teachers hold bachelor's and master's degrees, and they were fresh
**Parent: Parents hold diverse education, whereas some did not have any formal schooling.
*** Teachers and Parents were mixed in gender

1. Sindh Education and Literacy Department
2. Aga Khan University- Examination Board
3. Sindh Education Foundation
4. Indus Resource Center
5. Charter of Compassion
6. National Institute of Public Administration
7. Sindh Rural Support Organisation

APPENDIX B

Table B.1

Key Performance Indicators for EMOs in Sindh

	Key Performance Indicator	Measurement criteria	Weight
1	School Management Plan	• Annual management plan • Implementation framework Timeline • Development and operation of EMIS	20%
2	Improved Staff availability and attendance	• Improved staff attendance and functional attendance management	10%
3	Improved Students' enrolment, attendance, and retention	• Students' enrollment, attendance management, and retention plan • Improvement in student enrollment and retention rate benchmarked	10%
4	Lesson Planning and Student Assessment System	• Annual scheme of studies • Lesson planning mechanism • Improved student learning and achievement	20%
5	Training and Capacity Development of Staff	• Training need assessment • Pedagogical skills training	15%
6	Improved Community Engagement	• Meeting and engagement with the school management committee • Improved community outreach • Parent teachers' meetings	15%
7	Improved Health and Hygiene Practices	• Health and Hygiene practices plan • Demonstrated healthy practices of students	10%

Source: Government of Sindh, SELD. 2017. Public-Private Partnerships (PPP) Guide and Tool Kit. Karachi.

AN IMPACT EVALUATION OF GOVERNMENT SCHOLARSHIPS ON STUDENT SUCCESS: A CASE STUDY OF THE UNIVERSITY OF TURBAT

Riaz Ahmed, Adeel Ahmed and Waseem Barkat

ABSTRACT

This study tried to investigate the short to medium-term impact of government-sponsored scholarships on undergrad students' academic performance and other outcomes. Taking advantage of the recent initiatives of governments at both federal and provincial levels for introducing undergrad scholarship programs that provided us with a quasi-natural experimental research design, this study utilised a difference-in-differences (DID) approach to estimate the impact of scholarships on students' academic and success outcomes. Using the University of Turbat as a case study, we compared the academic performance outcomes — percentage marks, GPA, or CGPA — of the students who held scholarships with the academic performance outcomes of those in the same sessions, departments, and degree programs without having scholarships before, during, and after the awards. Our results show that the HEC Ehsaas scholarship program, which is designed to support financially needy students, improved the academic performance of male students in terms of marks obtained by only 4.10 per cent. This improvement is significant because an additional 4.10 per cent marks could save a student from dropping out of the university or improve the grade. To trace out channels of this impact, this study tested different hypotheses to validate the findings. These findings indicated that male students, who had obtained scholarships, were less likely to depend on their parental income for university-related expenses compared to female students. Also, they were more likely to focus on their studies by taking class notes seriously compared to their counterpart male students who did not hold scholarships. The positive impact of scholarships on students' other success outcomes (e.g., student retention, engagement and satisfaction, the acquisition of skills and competencies, and career success) particularly for males was also validated by several t-tests using our survey data. Surprisingly, this did not find any evidence of the impact of merit-based scholarships on students' academic performances.

1. INTRODUCTION

Education is one of the leading instruments for enhancing economic growth. It helps to uplift human capabilities through knowledge and skills and creates a progressive society. It also strengthens society. The education benefits are not only limited to the national economy but individuals also benefit from it. But unfortunately, one-sixth of the world's children, adolescents, and youth - 258.4 million - were out of school in 2018 and shockingly 93 million of them were from South Asia (UNESCO Institute for Statistics (UIS), 2019b). Pakistan has the world's second-highest number of out-of-school children after Nigeria. An estimated 44 % of the children aged 5-16, i.e., 22.7 million children, were not enrolled in schools in 2017 (Hunter, 2020). Further sizeable disparities among regions, socio-economic statuses, and genders exist. For instance, 78 per cent of girls from Balochistan and 58 per cent of girls and 52 per cent of the poorest children in Sindh are out of school (UNICEF, 2020).

The situation of higher education in Pakistan is not commendable compared to its neighbouring countries. The chance of getting higher education in Pakistan is only 4%, which is much lower than in India and China where the chances are 11% and 20%, respectively (Nasreen & Afzal, 2020). One reason for the current condition of education in Pakistan is low government spending on education. For instance, government spending on education during the last two decades remained at 2% of GDP (Ali, Hakim, & Abdullah, 2016). The Government of Pakistan reduced its spending on education from 4 per cent (target) to 2.9 per cent of its GDP in 2017 (Hunter, 2020). In 2019-20 the total education expenditure declined from Rs 868.0 billion to Rs 611.0 billion (Figure A1). It decreased by 29.6 per cent, which is an alarming statistic. Pakistan has only focused on primary and secondary education, and the tertiary/higher level has been neglected (Aziz et al. 2008).

Among other socio-economic and cultural constraints, poverty is one of the biggest hurdles to the development of higher education in Pakistan (Razi, 2016). Getting higher education is even much harder for females than males because, inter alia, money or financial constraint is the core hindrance to females' higher education (Abid & Khan, 2017; Amin, Tatlah, & Afghani, 2018; Hashmi, Shahzad, & Kanwal, 2016; R. Khan, Khan, & Khan, 2020). The lack of financial resources is the key barrier that every marginalised community in Pakistan faces to getting a higher education (e.g., slum dwellers) (Awab-us-Sibtain, Usman, & Husnain, 2020).

Under SDGs' Goal 4, 'ensure inclusive and equitable quality education and promote lifelong learning opportunities for all', some global targets were set by representatives of the global education community, including ensuring equal access to affordable and quality higher education for all genders, persons with disabilities, and indigenous peoples (targets 4.3-4.5) (UNESCO Institute for Statistics (UIS), 2019a). To accomplish these targets by 2030, the global community also committed (target 4. b) that by 2020, the global enrolment of students in higher education should increase significantly by the means of expanding the number of scholarships in developed countries for the students of developing countries. Though there are no such precise records on the number of scholarships, according to one estimate the developed countries provided public scholarships to only 1% of students in developing countries in 2015 (UNESCO Institute for Statistics (UIS), 2019a).

To reduce poverty and improve income distribution, the development of higher education could be a viable policy option (Qazi, Raza, Jawaid, & Karim, 2018). To that end, the Government of Pakistan has taken several initiatives on the supply side (e.g., the development of faculty members) of higher education in Pakistan. Both federal and provincial governments of Pakistan have launched several scholarship programmes under the umbrella of the human development programme. The HEC has initiated various merit and need-based scholarships for specific regions (Gwadar-China Scholarship Programme, Indigenous Scholarship, Aghaz-E-Haqooq-E-Balochistan Project, and Undergraduate Scholarship Programme for the students of Gilgit-Baltistan). The HEC also has initiated national-level scholarships such as the Prime Minister Fee Reimbursement scheme for the less developed areas (the scheme is closed), the Indigenous PhD Fellowship Programme, HEC Need-Based Scholarship, and Ehsaas Undergraduate Scholarship Programme.

Though an extensive body of research studies on the subject area is available, a methodologically rigorous study on impact evaluation in the context of Pakistan is missing. For instance, studies highlight that scholarship programmes in general increase the chances of accessibility to educational institutions, increase students' enrolment, and improve survival, retention, and academic performance (Barrow, Richburg-Hayes, Rouse, & Brock, 2014; Bettinger et al., 2017; Schudde & Scott-Clayton, 2016; Timilsana, 2017). In the context of Pakistan, B. U. Khan, Shah, and Gul (2019) in a survey based on self-administered questionnaires from 350 HEC need-based scholarship holders in four districts of KPK Pakistan and found that the scholarships had a considerably positive effect on education outcomes, i.e., the scholarships increased enrolment, improved attendance, and reduced dropouts.

In terms of a causal relationship between scholarship and students' academic performance, the study of B. U. Khan et al. (2019) has limited policy implications. Although they found a positive impact of scholarships on students' performance, their study did not take into account those students who were not awarded scholarships and were excluded from their study. Also, what would have been the educational performance of observed students if they did not get scholarships? What would have been the academic performance of those students who were enrolled in the same class as the scholarship awardees but were not awarded any scholarships? These and other similar policy-relevant questions motivated us to design this impact evaluation research. This impact evaluation will also improve our understanding and knowledge base on the effectiveness of government scholarships as interventions for student academic performance and success.

Impact Evaluation

To identify the effectiveness and successes of the government's need- or merit-based scholarship programmes in the province of Balochistan, we conducted a rigorous short- to medium-term impact evaluation by taking the University of Turbat as a case study. In this evaluation, we took the scholarship programmes initiated by both provincial and federal governments as policy interventions. Evidence derived from this impact evaluation helped us understand how these scholarship programmes are contributing by providing opportunities to students in Balochistan to access higher education. The findings of this case study apply to universities with similar institutional settings and characteristics.

Research Questions/Hypotheses

The main objective of the study was to investigate the impact of financial aid on students' success by taking the University of Turbat as a case study. More precisely, it was designed to answer the following four research questions:

- What is the impact of government-sponsored scholarship programmes on the academic performance of students at the University of Turbat?
- Which type of financial aid is a better intervention for supporting students to access higher education institutions located in the underprivileged regions of Pakistan: need-based or merit-based scholarships?
- What is the impact of access to scholarships on students' success beyond their academic performance at the University of Turbat?
- What are the key constraints, challenges, or barriers to the process of implementation, monitoring, and evaluation of the scholarship programs?

The rest of the paper is organised as follows. In Section 2 we discuss the most relevant literature followed by Section 3, which conceptualises the impact of financial aid on students' academic success in the HEI setting. In Section 4, we explain our research setting and a brief description of the scholarship programmes. In Section 5, we introduce the data and methodology. In Section 6 results and discussion are presented. Finally, we conclude the study in Section 7.

2. LITERATURE REVIEW

In a global context, the significance of scholarships is profoundly acknowledged across all levels of education. Specifically, in the year 2015, it gained more importance when the United Nation Sustainable Development Goals (SDGs) emphasised the inclusion of scholarship programmes as a tool for achieving its goals. The research has also identified scholarships as a significant instrument for the nation's development and growth. In this connection, rigorous research can be found in the literature which establishes the importance and the impact of scholarships on multiple psycho-social and economic variables. According to the literature, financial aid and scholarships can directly affect students' academic motivation, which eventually results in good academic performance. Campbell and Neff (2020) reviewed 105 research articles on international higher education scholarships. They found that the six primary outcomes of these scholarships were building human capital, bringing social change, promoting sustainable development, internationalising institutes, improving diplomatic ties, and enhancing access to education.

In addition, several studies reported empirical evidence of the link between scholarships or financial aid and students' academic success, motivation, satisfaction, retention, and engagement (Alon, 2011; Angrist et al., 2015; Glocker, 2011; Millea et al., 2018; Mulyaningsih et al., 2022; Waskito & Azizah, 2013). In their seminal work, Ganem and Manasse (2011) found that scholarships had a manifold impact on students' academic achievement, motivation and success. Academic success was measured by students' persistence, progression and timely completion of degrees (Ganem & Manasse, 2011). Moreover, researchers highlighted the need for institutional scholarships for student success as it is considered an essential tool or predictor for success. Mushtaq and Khan (2012) identified several antecedents of college scholarships that affected student performance and engagement. In another study, Watson et al (2014) found an interesting result that scholarship had a positive ripple effect on siblings, parents, relatives, and neighbours. Particularly, it encouraged parents to get other children into education as the burdens or expenses of educating children would be compensated through scholarships. Furthermore, they argued that social distance emerged among the students who were the scholarship recipients and those who were non-recipients of scholarships. They also argued that the scholarship stipend changed the course of students' lives. Over half became the most educated persons in their families and towns. Above all, these findings suggest that the social and economic value of scholarships needs to be evaluated on a greater spectrum (Watson et al., 2014).

In another empirical study, Cagasan et al. (2019) found that graduate students' perceived contribution of scholarships to academic success. The findings showed that a majority of the students (89%) were able to finish their studies within the prescribed time. Almost all of the students (97.8%) believed that scholarships contributed to graduate students' persistence and timely degree completion. The majority of students (93.3%) needed financial support to stay at university. Further surveys revealed scholarships reduced students' stress levels (48.9%) and that some students claimed that the financial assistance helped them with their living expenses (60%) and finish their education on time (Cagasan et al., 2019). In a correlation investigation, Bliven and Jungbauer (2021) established that student motivation, self-determination, and persistence were positively related to student recognition programs, acknowledging the students' efforts and other achievements in university. In addition, Rana et al. (2021) argued that scholarships enhanced the quality and standards of education among the scholarship recipients and further recommended that some scholarship programs were less holistic, which may not be able to cover the whole expenses of the students. In a recent empirical investigation, Mulyaningsih et al. (2022), found that in Indonesia, large-scale targeted government scholarships had a very strong impact on students' performance, in particular, those who were least privileged and lived lives in poor conditions.

3. CONCEPTUAL FRAMEWORK

The conceptual framework of this study was built on the comprehensive meta-analysis of York, Gibson, and Rankin (2015). They defined academic success (which is different from student success) based on Astin's (1991) input-environment-outcome (IEO) model as the theoretical framework for their study. According to the IEO model, the outcomes (O) of higher education are conditioned on inputs (I) and environment (E). Lately, Astin's

model has been further expanded by Pascarella and Terenzini (2005) by including demographic characteristics, such as family background and academic and social experience as inputs. The setting of HEIs includes people, programs, policies, cultures, and institutional experiences in the environment; and finally student characteristics, knowledge, skills, attitudes, values, beliefs, and behaviours after graduation in the outcomes. Combining both Astin's model and York et al., analytical review of the literature, and the definitions of academic success, this study followed the given conceptual framework (see Figure 1).

Inputs

Demographic characteristics of students, their family backgrounds, and academic and social experiences are necessary inputs for achieving academic success. We modified the model by including financial aid, which is the main variable of interest in this study, as an additional input. Financial aid included additional support from governments, philanthropists, or other sources in terms of scholarships, fee concessions, etc., to students that helped them to concentrate on their studies during degree programmes and achieve a high level of academic success. In this study, we measured financial aid by using government-sponsored scholarships in the form of fees, stipends, etc. Currently, there are three major sources of financial aid available for undergraduate students at the University of Tubat, namely, HEC need-based, HEC Ehsaas scholarship, and BEEF merit-based scholarship programmes. The other inputs for this study included students' previous academic records (matric and intermediate percentage marks, age, gender, parental education, etc.).

Figure 1: Conceptual Framework for Impact of Financial Aids on Students' Academic Success
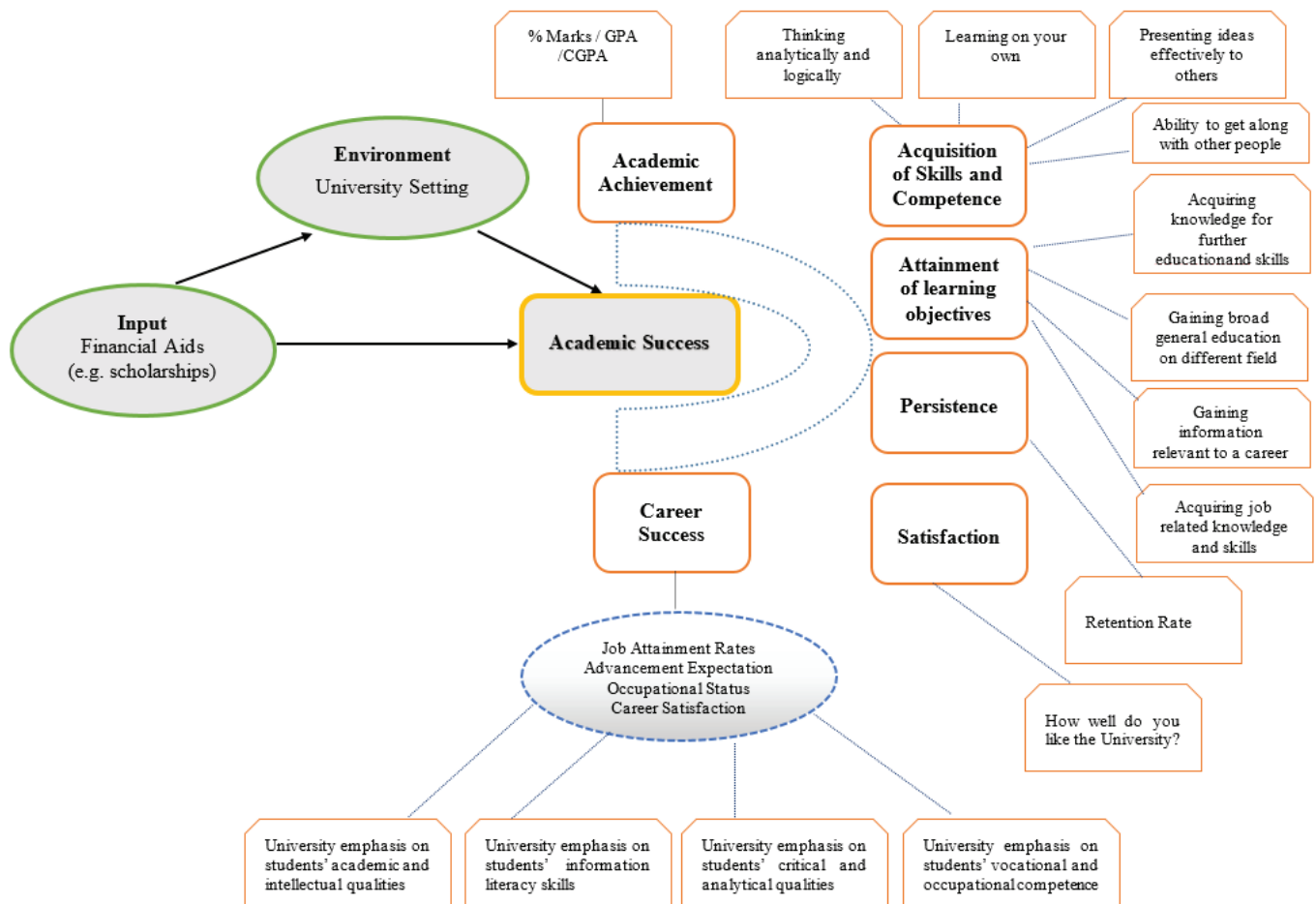
Source: Author's Conception based on York et al. (2015) and Pace and Kuh (1998).

Environment

The environment, which includes people, programs, policies, cultures, and institutional experiences in the HEIs, could affect students' academic success. In a university setting, people include the number of faculty members, student teacher-ratio, the number of teachers having PhD degrees, etc. Programs includes degree programs offered by a university. The culture of a university could influence students' academic success. In a diversified cultural setting, the interaction with others who belong to different backgrounds may influence students learning and career pursuit. In this study, our research setting was the University of Turbat, located in Turbat city. Turbat is far away from other cities in Pakistan, therefore, it attracts students who mostly belong to poor families of the same region. Therefore, the culture of UoT is less diversified in terms of students' ethnic or family backgrounds. Finally, institutional experiences may also influence students' performance and success. To capture the environmental and institutional variation in our analysis, we included degree programs and district fixed effects to capture these unobservable characteristics in our model.

Outcome: Academic Success

In this impact evaluation, we used academic success as our outcome variable. York et al (2015) defined and thoroughly discussed the term in greater detail in their meta-analysis. They defined academic success as "inclusive of academic achievement, attainment of learning objectives, acquisition of desired skills and competencies, satisfaction, persistence, and post-college performance." Academic achievement is a student's academic performance and ability which could be measured by the student's GPA, and grades in a course or an assignment (York et al, 2015). They further separated the term 'academic achievement' from two other terms, i.e., 'acquisition of skills and competence' and 'attainment of learning objectives.' However, these terms are used interchangeably for measuring academic success in the literature (see page 6, York et al, 2015). In this study, we opted for the terms academic achievement, acquisition of skills and competence, and attainment of learning objectives for measuring academic success in our empirical analysis. We measured the first term by students' GPA, CGPA or percentage marks in a given semester and the latter two terms by several students' self-reported questions from a survey dataset we conducted at the university by using the College Student Experience Questionnaire (CSEQ)[1] (Pace and Kuh, 1998).

Persistence is another academic success in our model that can be defined as "persistence corresponds to students' continued progression in an academic degree despite institutional transfers or stopping out" (York et al.,2015). Usually, it is measured by students' graduation and retention rates, but due to data limitations, we measured it with students' promotion rates to the next semester based on the university's institutional policy of promotion, probation, or dropout.

Satisfaction, though, is not itself a component of academic success but it is an outcome that includes other aspects of students' well-being, such as students' perceptions of the institution and climate, and their goal achievement which affects their ability to succeed at the university level academically (York et al, 2015). Therefore, including satisfaction as an outcome variable in our model captured other contextual components, which are deemed necessary for learning and academic success. It can be measured by students' satisfaction level with the university's facilities and academic environment and also their engagement in educational activities. Student engagement in a university setting is an essential aspect of comprehending students' satisfaction, persistence and class attendance. We used the survey questionnaire to ask several questions for measuring students' satisfaction and engagement level in the university. Such activities may include using the campus library, labs, centres for reading, writing, etc., or their involvement in discussing issues with faculty and other students.

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[1] The CSEQ is a product of the Center for Postsecondary Research & Planning at Indiana University (College Student Experiences Questionnaire (CSEQ) : Institutional Research Swarthmore College).

Finally, York et al (2015) suggested in their meta-analysis that career success is a part of academic success, which includes both intrinsic and extrinsic measures of it. It can be defined in several ways but it includes early job outcomes such as job offers, employment status, job performance, job satisfaction, and organisational satisfaction (York et al. 2015). Due to data limitation, we used students' self-reported responses or perceptions of their educational prospects, prospects of their career in the field, their level of background or specialised knowledge and skills that would help them in future to find and qualify for their desired jobs.

4. RESEARCH SETTING

Background of the University of Turbat

The University of Turbat (UoT) was established in May 2013 under the UoT Act 2012 and recognised by HEC as the 168th public sector university in the country on 12th March 2014. It is the second public sector general university in the province after the University of Balochistan. The establishment of this institute has not only fulfilled the desire of the public in this southern part of Balochistan, but it also covers the majority of districts scattered about the wide geographical. The primary objective of the establishment of this university was to address higher education challenges in the Makran Division of the province consisting of three districts, namely Kech, Gwadar, and Panjgoor besides the adjoining districts of Awaran and others. The establishment of this institute has met the higher education needs of nearly one-fifth of the population of the province.

The geographical position of the UoT is accessible to all districts of Balochistan due to the envisaged China-Pakistan Economic Corridor (CPEC) route as the UoT is situated on the main M-8 connecting Gwadar to the rest of the country. Turbat is the divisional headquarter of the Makran Division connecting the other two districts of Gwadar in the south and Panjgoor in the northeast. Turbat is the second most populous city in the province after Quetta.
After converting into a full-fledged university in 2013, the university expanded its academic departments from three to fifteen with four faculties by offering twenty-five programs in various disciplines. Apart from the main campus in Turbat city, it established one sub-campus in Gwadar in 2017 (recently converted into a full-fledged university) and another sub-campus in Panjgoor in 2020. The enrollment status and gender-wise strength of the main campus along with other campuses is 3,414 students of which female students are 1,335 representing 39.10 per cent of the student population. It was observed from the university's records, that the dropout rate at the undergraduate level (starting from the 1st to 8th semester) is very high, i.e., 33%. Along with the institutional policy, financial constraint is one of the major reasons for the high dropout rate (UoT's annual reports).

The UoT has three main types of need- or merit-based scholarships, i.e., HEC Need-Based Scholarship, HEC Ehsaas Undergraduate Scholarship, and Balochistan Education Endowment Fund (BEEF). Under these programs, about 901 and 980 scholarships were awarded to students in 2019 and 2020, respectively (see Table 1).

Table 1: HEC and BEEF Scholarship Programs at UoT in 2019 and 2020

Name o f scholarships	2020	2019
HEC Ehsaas Scholarship Programme	437	657
HEC Need-Based Scholarship Programme	63	38
BEEF Merit-Based Scholarship Programme	480	206

Source: Document Records of UoT

A Brief Description of Scholarship Programmes

In this impact evaluation, we used three major types of scholarships for undergraduate students at the University of Turbat who are/were enrolled in graduate programmes (4-5 years) in any department. The rationale behind taking undergraduate students as a unit of observation was as follows. Four- to five-year degree programmes consist of eight to ten semesters, which provide a sufficient number of observations for analysing the impact of scholarships during and after the programmes. By using students' data at undergraduate level programs we were able to estimate the scholarships' impact on students' academic performance or other outcomes beyond academic performance. The HEC Ehsaas scholarship program is purely for students who are enrolled in undergraduate programs (4-5 years). Also, BEEF provides a huge amount of scholarships at this level, which is about 40-45% of the total scholarship amount (see appendices A1 and A2 for further details).

The HEC Ehsaas undergraduate scholarship programme

Under its social safety net program, the Government of Pakistan has also initiated Ehsaas undergraduate scholarship programme in 2019 for supporting undergraduate students financially (Government of Pakistan, 2020; Higher Education Commission Pakistan, 2020a). In a policy brief, it stated that "this is the largest ever need-based undergraduate scholarship program in the history of Pakistan" (the Government of Pakistan, 2020). The programme focuses on attracting needy students to higher education in universities and colleges in the underprivileged areas of Pakistan. This program aims to provide 50,000 undergraduate scholarships with an average annual budget of Rs. 6 billion that would continue for 4 to 5 years with a target of 200,000 awards. Half of the scholarships are reserved for females. The scholarship covers tuition fees and a stipend of Rs.4,000 per month during the degree programme. The general eligibility criteria are a) a student belonging to a family with a family income less than Rs. 45,000, b) a student may retain the scholarship during the rest of the programme if his/her academic performance is satisfactory, and c) the eligible student must be enrolled in an undergraduate degree programme (4-5 years) offered at 119 public sector universities in Pakistan including the University of Turbat. The HEC has awarded 657 (40% females) and 437 (43% females) scholarships to the undergraduate students of the UoT in 2019 and 2020, respectively (see Table 2). Compared to its size, the HEC has awarded the University of Turbat more generously than other public sector universities in Balochistan.

Table 2: HEC Ehsaas Scholarships: Four Public Sector University in Balochistan in 2019 and 2020

Name of Universities	2020			2019		
	Total	Male	Female	Total	Male	Female
UOT	437	248	189	657	394	262
UOB	282	156	126	435	227	208
UOL	24	23	1	62	61	1
BUITEMS	235	147	88	594	517	77

Source: Financial aid offices of given universities in Balochistan

HEC Need-Based Scholarship Programme

The HEC-Need Based Scholarship Programme was started to provide opportunities through financial support to brilliant and needy students of deprived families and underprivileged classes in the least-developed areas of Pakistan so that they can obtain high-quality education at the public sector institutions/universities of Pakistan (Higher Education Commission Pakistan, 2020b). Compared to other scholarships, due to budget constraints, a very limited amount – 5% of the recurring budget – is reserved for need-based scholarships. The eligibility criteria are not very strict as compared to other scholarships. The need assessment is the prerequisite for

inclusion in this programme which is mainly based on the family's status, their total monthly income or expenditure, and household assets. The scholarship covers tuition fees and a stipend of Rs. 6,000 per month during the complete programme. The eligible students must be enrolled in any undergraduate degree programs (4-5 years) offered by the 94 public sector universities in Pakistan. Only 38 and 63 students were awarded the HEC need-based scholarships in 2019 and 2020, respectively, including both undergraduate and graduate students (see Table 1 above).

EC has awarded the University of Turbat more generously than other public sector universities in Balochistan.

BEEF Scholarship Program

The Government of Balochistan, through its finance department, established an educational endowment fund of Rs. 5 billion. For investment, monitoring, and disbursement of the funds, a company, namely, the Balochistan Education Endowment Fund (BEEF) was formed and registered under the Companies Ordinance, 1984, Section 42. The main objectives of BEEF are to increase the provincial literacy rate, enrolment and retention rates of students, create a talented human resource, and improve socio-economic and poverty conditions in Balochistan (the Government of Balochistan, 2016a, 2016b, 2017, 2018). From the proceeds of the endowment fund, BEEF has been awarding need- and merit-based scholarships to talented and needy students mainly belonging to Balochistan. BEEF also awards scholarships to students at secondary, intermediate, master's (2 years), professional (4-5 years), MS/MPhil, and PhD levels. For undergraduate (4- 5 years) degree programs, BEEF usually selects the top 10 to 20 students from the list of top 20 to 40 students provided by the universities in Balochistan. BEEF has awarded scholarships to about 21,000 worth more than Rs.591 million so far (see BEEF Policy Guideline 2019-20, the Government of Balochistan, 2020). Further details are given in Table A1, Appendices.

5. EMPIRICAL ANALYSIS STRATEGY

In this impact evaluation, we utilised a mixed method for estimating the short- to medium-term impacts of government-sponsored scholarship on students' academic success in a public sector university in Balochistan. Below we present a simple model for analysing the impact of scholarships (T) on students' success outcomes (Y):

$$Y = \beta_0 + \beta_1 T + \mu$$

Furthermore, we expanded the above model by using the outcome model of Albouy (2004) through which we evaluated the government scholarship programmes' impact on students' success outcomes (such as academic performance that was measured by % change in marks or GPA/CGPA) Y_{ijt}:

$$Y_{ijt} = \beta_0 + \beta_1 T_i + \beta_2 Post_t + \beta_3 T_i * Post_t + \varepsilon_{ijt}.$$

In the above difference-in-differences (DID) model, where T_i is the treated group (T = 1, 0), 1 indicates students who were/are enrolled in a degree program j and awarded a scholarship (i.e., the treatment group), and 0 indicates similar students who were not awarded any type of scholarship because they enrolled before the scholarship programmes were launched or were not awarded scholarships due to financial constraints (i.e., the control or comparison group). We extracted students' performance outcomes (i.e., students' GPA/CGPA or percentage marks) for two time periods or semesters ($Post_t$ = 1, 0). 1 indicates the periods (i.e. the semester(s)) during and after the treatment group received scholarships (post-treatment) and 0 indicates the periods (or semester(s)) before that the students received their scholarships. The index i represents students *(i = 1, 2..., N)* having observations for at least two time periods *(t = 1, 2, ...,8)*, one for the semester(s) before the award and the other for the semester(s) during or after the award. ε_{ijt} is the idiosyncratic error term.

Furthermore, in this quasi-experimental design treatment assignments (scholarships) were not made by a randomised process but were rather made on some arbitrary criteria (they were either selected based on a need or merit). Due to selection criteria, the comparison groups were possibly sandwiched between two possible treatment groups (need- and merit-based scholarships). At the one extreme, students who were eligible for merit-based scholarships probably had better standards of living than the rest. For example, the students who

availed of BEEF merit-based scholarship awards probably got the same awards for each succeeding year due to their higher academic achievements (e.g. CGPA), which would also be highly correlated with their family social status. At the other extreme, the students who availed of a need-based scholarship probably had lower standards of living because of the prescribed eligibility criteria that made them eligible for the award. The HEC Ehsaas scholarship programme is an example of such a programme that selects students based on the need assessments.

To avoid biased estimates that were possible due to the selection bias and given the availability of data, we expanded the model by including other control variables or the student level baseline characteristics, Si, programme level characteristics, Pj, and district level controls, Dd. Thus, the functional form of the estimation model became:

$$Y_{ijt} = \beta_0 + \beta_1 T_i + \beta_2 Post_t + \beta_3 T_i * Post_t + \sum_j \gamma_j S_i + \sum_k \delta_k P_j + \sum_l \theta_k D_d + \varepsilon_{ijt}.$$

In the above equation, Si is the student background information (i.e., students' previous academic records (percentage marks in matric and intermediate), parents' education, gender, age, etc.). P_j is a set of dummy variables that control for departmental level variations and degree programs ($j = 1, 2,...,13$ representing BBA, BS Economics, etc.), and D_d is a set of dummy variables for districts that control the variation in students' domicile. The difference-in-differences (DID) estimation technique is applicable when there are sufficient numbers of observations in both treatment and control groups and the two periods (in the semesters before and after the scholarship intervention). We used students' records who were enrolled in sessions 2017-20 and 2018-21 for our main DiD analysis.

The model was estimated by OLS and standard errors were robust. In other cases (such as using survey-based datasets), though we still had observations on both treatment and control groups (students with scholarship and without scholarship), due to losing the pre- and post-intervention interactions, we either applied a t-test or a multiple regression model to estimate the impact of scholarships on other dimensions (quantitative-nature) of student academic success, such as student retention rate, their engagement, satisfaction, etc.

6. DATA AND METHODOLOGY

To understand the impact of scholarships on students' academic performance and success, we used a triangulation of mixed methods by collecting administrative data from one of the public sector universities in Balochistan along with a survey in the same university, key informant interviews (KIIs), focused group discussions (FGDs), and policy documents from the scholarship monitoring bodies (Higher Education Commission of Pakistan (HEC) and Balochistan Educational Endowment Fund (BEEF)).

Quantitative Data

This study used a wide range of secondary quantitative data (e.g., students' academic performance measured by student' marks in percentage, GPA, and CGPA; students' retention rates, and students' percentage marks in matric and intermediate levels) collected from several sources at the University of Turbat. These sources included students' semester gazettes from the office of the controller examinations, MIS records from the IT section, lists of awardees, and other scholarship documents from the financial aid office (FAO). These sources also provided us with information on other control variables, which were used in the analysis, including gender, age, district, BS programs, and sessions (2017-20 to 2021-24).

Survey Data

In addition to quantitative data, we intended to investigate the impact of scholarships on students' academic success beyond their academic performance. Therefore, we complemented this study with survey data, which we conducted in November and December 2021 at the University of Turbat. The survey questionnaire was adopted from the CSEQ[2] (Pace and Kuh, 1998) and with some amendments of background information. There were 141

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[2] The CSEQ is a product of the Center for Postsecondary Research & Planning at Indiana University (College Student Experiences Questionnaire (CSEQ) :: Institutional Research :: Swarthmore College).

questions in the survey questionnaire including students' background information, their experiences using a library, computer labs, course learning materials, writing, their experiences with faculty, using campus facilities, personal experiences, scientific and quantitative experiences, opinions about the university, the environment of the university, level of their knowledge, skills, and competence. We used the EvalBee application and designed our questionnaire accordingly. In our survey, the students used their answer sheets to mark their selected options on the sheet. We extracted the data in Excel format from the EvalBee[3] after scanning the answer sheets (see Figure A 3). We generated a pseudo list of students' roll numbers, which were used in the survey and later on for merging the survey data with other datasets.

By using the examination gazettes, we framed the sampling framework of this study. The latest gazette results of the students were used for the enrolment of existing students at the university. As per semester results, the total population of this survey consisted of 1,826 students who were enrolled in the 13 undergrad degree programs of the four faculties at the UoT. Except for one program (LLB, 5-year), all other programs were for four years. The cohorts of this study included students who were enrolled in sessions 2018-21, 2019-22, 2020-23, and 2021-24. The official approval from the vice-chancellor of the University of Turbat for conducting the research activities at the university was taken and we conducted the survey under our supervision in the classrooms (see Figure A 2 for approval). We read out each question loudly in the Balochi language and students marked the answers on their answer sheets. Despite the tough schedule of classes at the university, we distributed 1,780 questionnaires and collected 960 (53.93%) responses successfully. After cleaning and merging this dataset with other datasets 579 (60.31%) questionnaires were finally usable for analysis.

Other Instruments for Data Collection

In addition to the survey and secondary sources data, we also conducted key informant interviews (KIIs) with the concerned officials of BEEF, the University of Turbat, the University of Loralai, the University of Balochistan, SBK Women's University, and BUITEMS. We conducted 17 KIIs, including 13 from the universities (i.e. focal person of the FAOs, chairpersons or deans of departments or faculties, and members of the Institutional Scholarship Award Committee (ISAC)) and 4 concerned officials from the monitoring agency (BEEF). The survey tools for this analysis were taken from MacAuslan et al. (2019). In addition, we also conducted four FGDs with students who were awarded any type of scholarship in the given four public sector universities of Balochistan (UOB, BUITEMS, SBKWU, and UOL). Each FGD comprised 10-12 students. The key questions in FGDs or interviews were based on the scholarships' impact other than the students' cognitive learning skills (i.e., academic performance) such as scholarships' spillover effect or externalities (both positive and negative) in the form of supporting their siblings' education, part-time jobs, reasonable stipend amount, pressure for retaining scholarship, etc.

In addition to that, the main focus of discussions and interviews was also on the areas of need assessment, programs' monitoring and process evaluation, budget constraints, barriers to implementation, delays in payments, knowledge and information dissemination, data recording, maintaining and updating, etc. The discussions and interviews were in the language in which students or interviewees were most comfortable. The interviews were recorded on our mobile phones with the interviewees' consent (signed by them). The audio tapes were transcribed in the recorded language first and then translated into English for analysis.

In addition, to assess the process of implementation, monitoring and evaluation, we also collected documents that contained information on scholarships. This exercise was done for extending the scope of this study to the entire process of scholarship programmes beyond the University of Turbat by including the processes and experiences of other universities in Balochistan. That's because institutional factors such as institutional failure in managing the process of scholarship can distort the overall discussion of the governance issue.

Descriptive Statistics

The unit of observation in this analysis was students enrolled in any of the thirteen undergraduate programmes (4-5 years) at the University of Turbat (for programmes' details see Table A3). We made a huge dataset by combining four datasets, namely student information system (SIS), result gazettes, scholarship lists, and survey datasets. Though we lost a huge number of observations due to combining all the datasets, we still had a sufficient

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[3] The EvalBee (free OMR answer sheet scanner, a mobile app) is basically designed to create multiple choice question exams and generate instant exam reports by scanning answer sheets with a phone camera.

number of observations for analyses. After cleaning the data, overall the dataset consisted of 1,740 individual observations, of which 66.84 % were male and 33.16 % were female. Out of the total students included in the analyses, about 55.86 % were awarded any type of scholarship, and 51.07 % of males and 65.51 % of females were awarded any type of scholarship. According to the district-wise distribution of scholarships, about 61, 70, 75, and 92 per cent of students were from Turbat, Punjgoor, Gwadar, and Awaran, respectively. Natural sciences (e.g. biochemistry, biotechnology, and botany) were very popular subjects among female students and above 70% of females received scholarships (see Table A3 for further detail). Table 4 shows descriptive statistics of the students' academic performance. On average, students secured 60.29 per cent marks (2.35 and 2.47 in terms of GPA and CGPA, respectively) in the comparison group, whereas in the control group students secured 75.74 per cent marks (3.24 in terms of both GPA and CGPA) in the control group.

Table 4 shows a significant difference between outcome variables of interest in the treatment group (students having scholarships) and control group (students having no scholarships) that were observed before the scholarship programs were launched at the University of Turbat. For instance, among enrolled students in different undergraduate programs of the university, the average percentage marks of students without any expected scholarship were 55.40, whereas it was 75.89 per cent for students with an expected scholarship before the scholarship programs were launched.

On average, the percentage of marks of students increased by 10.16 points in the control group but surprisingly the marks reduced by 0.25 points after the award of scholarships. Descriptive statistics in Table 4 further reveal that the academic performance of students in both treatment and control groups either before or after the award varied significantly when disaggregated by gender (male vs. female). For instance, the average difference in the percentage of marks between males without scholarships vs. male-with-scholarship and females without scholarships vs. females with scholarships was 20.02% (i.e. 75.16% - 55.14%) and 20.89% (i.e. 77.20% - 56.31 %), respectively. Interestingly, the percentage marks of female students who had secured a scholarship increased on average from 77.20% to 78.49% but reduced from 75.16 to 73.94 for male students who had secured a scholarship.

Table 3: Descriptive Statistics of Students' Academic Performance (in Percent, CGPA and CGPA): Session 2017 and 2018

Outcome Variable	Percentage Marks				GPA				CGPA			
	Students without Scholarships		Students with Scholarships		Students without Scholarships		Students with Scholarships		Students without Scholarships		Students with Scholarships	
	Obs.	%	Obs.	%	Obs.	mean	Obs.	mean	Obs.	mean	Obs.	mean
Before the Award												
Total	542	55.40	778	75.89	552	1.98	782	3.21	548	2.06	777	3.22
Male	423	55.14	500	75.16	431	1.96	504	3.19	429	2.05	502	3.18
Female	119	56.31	278	77.20	121	2.04	278	3.25	119	2.11	275	3.28
During and After the Award												
Total	1922	61.67	3938	75.70	1929	2.46	3940	3.25	1930	2.56	3939	3.24
Male	1403	58.93	2415	73.94	1407	2.35	2415	3.15	1408	2.42	2415	3.16
Female	519	69.08	1523	78.49	522	2.86	1525	3.41	522	2.91	1524	3.36
Scholarship Types												
Total	2464	60.29	4716	75.74	2481	2.35	4722	3.24	2478	2.47	4716	3.24
HEC Ehsaas			4064	75.47			4070	3.22			4065	3.21
BEEF			342	79.02			342	3.52			342	3.57
HEC Need			310	75.54			310	3.27			309	3.28

Data Source: Authors' calculations based on the UoT result gazettes and scholarship awardees' lists.

7. RESULTS AND DISCUSSION

Education is one of the leading instruments for enhancing economic growth. It helps to uplift human capabilities through knowledge and skills and creates a progressive society. The education benefits are not only limited at the national level but individuals also benefit from it. Poverty and financial constraints are core hindrances in the way of growth in higher education. To reduce poverty and improve income distribution, the development of higher

education can be a viable policy option. To that end, the governments both at the federal and provincial levels have taken several initiatives for students' participation in HEIs by granting them scholarships. These scholarships are of two main types, i.e., need-based and merit-based programmes operating in public sector universities located in underprivileged areas of Pakistan.

This rigorous short- to medium-term impact evaluation was carried out to assess the situation of three different types of scholarship programmes (HEC Ehsaas Scholarship, HEC Need-Based Scholarship, and BEEF Scholarship) and their impact on students' academic success at the University of Turbat (UoT). We dropped HEC Need-Based scholarship for the first part of this impact evaluation because of two reasons. First, the number of awardees was few due to the limited size of HEC's recurring grant. Only 5% of the HEC recurring grant in university is allocated for the HEC need-based scholarships. Second, this scholarship was awarded in the first semester due to which we lost the pre-intervention results (per cent marks, GPA, CGPA, etc.). Therefore, we focussed on the HEC Ehsaas Scholarship and BEEF programmes.

Our variable of interest in this study was student academic performance, which we measured by students' percentage marks in the semester. The percentage of marks of students at the university level was higher for the students who received scholarships than for those who did not receive any scholarship, both before and after the intervention (see Table 4 for further detail).

 To test the hypothesis that whether the government-sponsored scholarship programmes brought any significant impact, positive or negative, on students' academic performance we used the ordinary least square (OLS) method to estimate the model. Both matric and intermediate percentage marks along with parental education control variables were included in the regression for controlling the students' background information. Also, the fixed effects of degree programmes, semesters, and district levels were included for further controlling the institutional or district-level variations in the datasets.

Impact of Scholarship on Students' Academic Performance (Research Question 1)

This study, by utilising a quasi-natural experiment research design with a difference-in-differences (DiD) estimation approach, compared the impact of government-sponsored scholarships on the academic performance of students who were enrolled in undergraduate programmes at the UoT and had a scholarship with academic performance of similar students who are/were enrolled in the same undergrad degree programs but did not have scholarships. The results of the regression are given in Table 4.

Starting with the baseline regression (Column 1, Table 4), the estimated coefficients of βs indicate that overall there was no seemingly significant impact of parental education or students' intermediate marks on students' academic performance measured in terms of per cent marks obtained in undergraduate programs. However, the per cent marks obtained in matric was seemingly a better predictor of obtaining marks later in undergraduate programmes.

Results reported in Table 4 indicate that, on average, students who held scholarships obtained 4.58% higher marks (see Column 1) compared to those students who did not have any scholarships. In terms of specific scholarships, the results show that the students with need-based scholarships obtained 2.43% higher marks and the students with merit-based scholarships obtained 9.39% higher marks (see Column 7) compared to those students who did not hold any scholarship. Due to learning experiences, the academic performance (percentage marks) of all the students increased after the post-intervention semester.

The estimated coefficient indicates that the government-sponsored scholarships, on average, seemingly did not affect the academic performance (percentage marks) of undergraduate students with scholarships compared to the academic performance of undergraduate students without scholarships during and after the intervention happened.

To examine the gender heterogeneity of the scholarship on students' academic performance, we ran two separate regressions, one for males (2) and one for females (3). Interestingly, our results show that the female students in

our sample performed significantly better than the male students after the scholarship intervention (7.18% vs. 4.5%), but the overall intervention of scholarship programmes did not have any significant short- to medium-term impact on students' academic performance.

Which intervention is better for students to access higher education: need- or merit-based scholarship? (Research Question 2)

Given the eligibility criteria and the nature of scholarships, we did another exercise to tease out the impact of scholarships on academic performance by splitting our sample into students with need-based scholarships (Column 4 and Column 5) and merit-based scholarships (Column 7 and Column 9).

Results in Column 4 show that the HEC Ehsaas scholarship programme (for which eligibility is purely based on need assessment) increased the percentage marks of those students who held a scholarship compared with those who did not. In other words, on average, a student who held an HEC Ehsaas scholarship obtained 3.10% more marks compared to a student who did not hold any type of scholarship in the subsequent semesters (third to eighth). Further analysis shows that the impact of the HEC Ehsaas scholarships on students' academic performance in the overall sample s due to male students only as the estimated coefficient for female students is insignificant. Due to the award of the HEC Ehsaas scholarship programme, the performance of male students in the undergraduate programs improved by 4.10%, which is both statistically and economically significant. This percentage increase could change a student's grade from B to B+, for example.

Columns 7 to 9 of Table 4 show the impact of BEEF Merit-Based Scholarship on the academic performance of undergraduate students. The estimated coefficients of all the students and both genders are insignificant. There might be several reasons why there is no impact of the BEEF scholarship on student academic performance, but the main reason emerged from our FGDs (BUITEMS, UOT, Loralai, SBK). In 3 out of 4 FGDs, the participants strongly preferred and appreciated the HEC Ehsaas programs, while in the remaining one FGD, the participants appreciated it because they thought that the students should be rewarded for their performance. They said that since there are several need-based scholarship programmes at the university level, BEEF is the only one that is based on merit.

Table 4: Program-Semester Fixed Effect Estimates of Government Scholarships on Students' Academic Performance

Outcome Variables: Semester Marks (in per cent)	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
	Overall Sample			Need-Based Scholarship (Ehsaas Programme)			Merit-Based Scholarship (BEEF Programme)		
	Total	Male	Female	Total	Male	Female	Total	Male	Female
Educated Parents (at least one graduated from school)	-0.00	0.30	-2.20*	-0.42	-0.33	-1.87	0.18	0.01	1.45*
	(0.63)	(0.84)	(1.26)	(0.71)	(0.91)	(1.30)	(0.61)	(0.94)	(0.80)
Intermediate Marks (%)	0.05	0.06	-0.011	0.03	0.07	-0.028	-0.06	-0.13**	-0.07
	(0.03)	(0.06)	(0.06)	(0.04)	(0.06)	(0.07)	(0.03)	(0.06)	(0.05)
Matric Marks (%)	0.21***	0.14***	0.56**	0.21***	0.12**	0.61**	0.14***	0.15***	0.00
	(0.05)	(0.05)	(.23)	(0.05)	(0.06)	(0.24)	(0.04)	(0.05)	(0.11)
Scholarship Holders	4.58***	4.95***	1.92	2.43**	1.21	4.52**	9.39***	10.31***	9.18***
	(0.90)	(1.10)	(1.60)	(1.17)	(1.31)	(2.26)	(0.90)	(1.21)	(1.26)
Post-Scholarship Semester	5.20***	4.5**	7.18***	4.41**	3.01	8.75***	4.27***	3.37**	6.61**
	(1.69)	(1.90)	(2.51)	(1.86)	(1.96)	(3.17)	(1.51)	(1.69)	(2.61)
Scholarship Holders x Post-Scholarship Semester	0.39	-0.15	0.54	3.10**	4.10***	-2.58	-0.75	-1.58	-0.13
	(1.46)	(1.78)	(2.02)	(1.39)	(1.55)	(2.51)	(1.47)	(1.86)	(1.98)
Observations	869	603	266	759	529	230	634	436	198
R – square	0.2943	0.2743	0.3809	0.2940	0.2928	0.3683	0.4597	0.4290	0.5983
District Fixed Effect	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Semester Fixed Effect	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Program Fixed Effect	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

Note: Observations comprise students enrolled in the sessions 2017-20 (5th to 8th) and 2018-21 (3rd to 8th). Each session starts in January and ends in December. Robust standard errors are in parenthesis.* $p<0.1$, ** $p<0.05$, *** $p<0.01$. Models estimated by OLS. Data Source: Authors' calculations based on the UoT result gazettes, awardee lists, and survey at the UoT.

Possible reasons for the better academic performance of male students

To investigate the possible causes of getting higher marks by male students due to the HEC Ehsaas scholarship, we utilised data from the survey we conducted in November and December 2021 at the University of Turbat. Given the regional socio-economic conditions, and cultural constraints, one can think of several reasons but we limit our analysis and discussion to two possible causes. First, in a male-dominated society where a marketplace job is mostly an option only for male students, financing their university-level education comes with the added pressure of concentrating on their education and performing well. Our survey data also show that there was a significant difference between how males and females met their university expenses. Male students mostly financed their expenses by themselves and females' expenses were mostly met by their parents or spouses. From Table A 4 (Column 1) in Appendices, it is clear that, on average, 19.35% more females than males depended on parental income for their university expenses. However, statistics in the same column (Table A 4, Column 1) show that although parental support decreased due to scholarships awarded to their children, the reduction was twice as much for females than for males. Elaborating the case further, it is quite clear from the self-reported survey data that, on average, 9.26% of male students and 5.66% of female students met their university expenses mostly by themselves (Column 2 of Table A4). Moreover, the scholarship awards seemingly helped about 4.91% of the male students. However, for female students the difference in the percentage between scholarships awarded and non-awarded was insignificant. We also observed from our survey data that the scholarship awards had seemingly reduced the attitude of female students toward taking notes of their class lectures. However, the awards did not bring any significant difference between students with scholarships and students without scholarships in taking notes of their lectures (see Column 3, Table A4).

We tried to disentangle the potential causes for justifying why the male students in our sample got better results compared to the female students. One possible explanation could be that the male students because of getting scholarships got extra time from their working hours to focus on their studies. To check the validity of this argument, we ran two regressions. We regressed the dependent variables, namely, the parents meeting the university expenses of their children and students taking detailed class notes on dummy variables for scholarship holders and gender, and including control variables, i.e., district, semester, age and parental education (see Column 1 and Column 2 of Table 5). The results show that 14% of the students who held a scholarship were less likely to depend on their parental income for their university expenses compared to the students without any scholarships. Compared to female students, male students were also less likely to depend on their parental income for their education expenses.

Coming to our variable of interest, i.e., the interaction term (scholarship holders x male), 12 per cent of male students with a scholarship, reduced dependency on their parental income for university education compared to female students who got a scholarship as well as those students who did not get any type of scholarship. To further strengthen the argument, we also investigated whether there was a significant difference between the attitude of male students with scholarships towards class participation or note-taking and their counterparts and female students. The DiD estimates show a difference of 0.69 points between male students with scholarships and other students with or without scholarships (see Column 2 of Table 5). These results, together with the results presented in Column 3 of Table A4, show that this difference is not because of being a male student with a scholarship, rather the difference is because female students who got scholarships were less likely to take class notes. It can be inferred from this analysis that the scholarship likely made a difference in the academic performance of male students because of reduced dependency on self and parental financial means.

Table 5: Possible causes/channels of scholarship that improve male students' academic performance

Outcome Variables	Parents meeting students' university expenses (Value = 1, and 0 otherwise)	Students took detailed class notes during class (never, occasionally, often, very often)
Scholarship holders	-0.14***	-.031
	(0.05)	(0.23)
Male	-0.13***	-1.10***
	(0.04)	(0.20)

Scholarship Holders x Male	-0.12*	0.69**
	(1.06)	(0.28)
Observations	863	849
District Fixed Effects	Yes	Yes
Semester Fixed Effects	Yes	Yes

Note: Observations comprise students enrolled in sessions 2018-21 to 2021-24. Robust standard errors are in parenthesis.* p<0.1, ** p<0.05, *** p<0.01. Model (1) is a linear regression model (2) is an ordered logistic regression.

Data Source: Authors' calculations based on the UoT's, result gazettes, awardee list, and survey data.

Robustness Checks on Main Findings

Alternative Measures of Academic Performance

In our main analysis, we measured academic performance with percentage marks obtained in a semester to capture the maximum variation in the dependent variable. However, there are other measures available that are important in the semester system, which are grade point average (GPA) and cumulative grade point average (CGPA). We did not choose these measures for our main analysis because in the semester system once a student attained a GPA or CGPA of 4 in a semester and maintained it in the subsequent semesters, the outcome variable of interest would not vary for that student. On the other hand, percentage marks might have varied according to the student's performance in each succeeding semester. Columns 1 to 3 and 4 to 6 of Table A5 present the findings of the HEC Ehsaas scholarship's impact on students' academic performance in terms of GPA and CGPA, respectively. As expected, according to both the measures, the GPA and CGPA of male students improved by 0.313 and 0.183, respectively after the scholarship was awarded compared to the GPA and CGPA OF their counterparts male students who had no scholarship. On the other hand, there was no sufficient evidence that the academic performance of female students according to these measures improved after the awards of scholarships.

Placebo experiment

A serious concern is that if a time trend existed in the data we used due to numerous confounding factors, the estimated coefficients we got from our DiD analysis would be biased. Therefore, we ran a placebo experiment to check the robustness of our results, especially for the HEC Ehsaas Programme for which we got a positive impact of scholarships on male students' academic performance. The basic assumption of the placebo experiment was that the Ehsaas scholarships were awarded to students in the first and the third semesters of sessions 2018-2021 and 2017-20 rather than being awarded in the third and fifth semesters of sessions 2018-2021 and 2017-20 respectively. Since we had a sufficient number of observations for both pre- and post-intervention scenarios, we were able to estimate the impact of the pseudo-scholarship awards on students' academic performances.
The findings from this placebo exercise further strengthen our initial findings. Here the estimated coefficients of our variable of interest in all cases remained statistically insignificant (see columns 7 to 9 of Table A5). Based on evidence extracted from this placebo experiment further proposes that need-based scholarships could improve the academic performance of male students by reasonable percentage points.

The findings from this placebo exercise further strengthen our initial findings. Here the estimated coefficients of our variable of interest in all cases remained statistically insignificant (see columns 7 to 9 of Table A5). Based on evidence extracted from this placebo experiment further proposes that need-based scholarships could improve the academic performance of male students by reasonable percentage points.

The Impact of Scholarships on Students' Other Success Outcomes (Research Question 3)

Persistence (Retention)

With the given data direct measures of retention rate were not possible. We measured it with the University of

Turbat's policy for probation and the minimum requirements for awarding a degree. The students drop out of the university if they do not maintain a minimum CGPA of 1.3 and they are put on probation if their CGPA is between 1.3 – 1.7. If they maintain a CGPA of 2.0, which is the required minimum CGPA to get the degree, they keep their enrolment. By using this policy intervention, we created a dummy variable, namely, expected retention which was 1 if a student whose CGPA was greater and/or equal to 2, and 0 otherwise. We used this indicator to test the hypothesis of whether it was students with scholarships who were the most vulnerable to dropping out or not completing a university degree or students without scholarships.

We did a means comparison of the t-test to check the difference between percentage marks obtained by students in the treatment group (students with scholarships) and the comparison group (students without scholarships) who could not complete their degree requirement and dropped out. Here, we used the data on the students who were enrolled in the sessions 2017-20 and 2021-24. The results are shown in Table A6. In our sample, overall 17.76% more students without any scholarship were vulnerable and were expected to not maintain their required CGPA to acquire an undergrad degree. On average, male students were seemingly more vulnerable than females to drop out of university if they did not have any scholarships. Among the students who had no scholarship, about 19% of males and 12% of females had less than 2 CGPA and were likely to be dropped out without degree completion.

Student Engagement and Satisfaction

Table A7 shows the mean differences in scales of different indicators as a proxy to measure students' engagement and satisfaction levels between students who held scholarships and students who did not hold any scholarships. On a scale of 0 to 3, students generally liked the University of Turbat more on average (i.e., 0.19 points) if they held HEC Ehsaas Scholarship than the students who did not. However, the difference in liking the UoT was significant only for male students (see Column 1 of Table A7).

For the engagement of students, which is one of the important factors in students' academic success, we used four indicators which possibly measure the level of students' engagement in activities in their academic pursuit (see columns 2 to 5 of Table A7). The scale for measuring the level of students' engagement in different activities at the UoT was 0 to 3. 0 indicates never, 1 indicates occasionally, 2 indicates often, and 3 indicates very often. When we asked the students how often they talked with their instructors about their course materials, their grades, assignments, arranging make-up classes, etc., we observed that, among respondent students, the average score for the students with scholarships was 2.08, and for the students without scholarships it was 1.71 – a significant difference (0.37 points). Though this significant difference was observed for both genders, it was much higher for male students (0.46) than female students (0.21). Similarly, we also asked the students how often they discussed their career plans and ambitions with a faculty member. The average score was low for both groups (treatment and control and both genders (male and female)), but, interestingly, it was much higher for male students who held a scholarship than for all other cases (see Column 3 of Table A 7).

To trace students' satisfaction and engagement in the university environment, we asked how often they asked a friend for help with a personal problem. In this case also it was observed that students most likely asked their friends for helping them with their personal problems if they had any scholarships and this observation was held for male students only (see Column 4 of Table A7). Finally, we also asked students about their engagement in learning activities by using campus facilities. The question was how often they used computer labs or centres to improve their study or academic skills such as reading, writing, etc. Overall the mean score on this scale was very low, which means that either there were limited campus facilities at the UoT for students or there was limited student engagement in the university's labs or centres. The significant difference in mean scores of 0.18 and 0.26 for total and male samples shows that the students who had scholarships, particularly male students with scholarships, used these facilities much more than their counterparts (see the last column of Table A 7).

The Attainment of Learning Objectives

The degree programmes in universities are generally designed to provide students with a learning environment for acquiring education, knowledge, skills or information that could be applicable to specific careers or jobs,

professional or scientific fields or even a wide range of general education. We used four indicators to measure students' perception of the learning objectives of the programs they were enrolled in by linking them with their potential career prospects.

These indicators were measured on a 4-point scale, i.e., 1(very little) to 4 (very much). Overall, students' responses on these indicators were positive and above 2.5. In the first two questions, we asked students about their experiences at the UoT. Specifically, we asked to what extent they feel they had acquired knowledge and skills applicable to a specific job or type of work, and to what extent they feel they had acquired background and specialisation for further education in a professional, scientific, or scholarly field. The responses to these questions were almost the same. Though students responded to these questions very positively, overall we found no significant difference in the mean scores of the students with and without scholarships. Nevertheless, we observed that the male students with scholarships had higher scores by 0.10 and 0.13 points than their counterparts on Q1 and Q2, respectively. On the other hand, we surprisingly found a negative difference in the mean scores of female students with and without scholarships on both questions (see columns 1 and 2 of Table A8). To further strengthen and validate our findings, we asked two additional similar questions of students using the same scale. The responses were positive in both treatment and control groups and their mean score differences were significantly high for both genders on both questions (see columns 3 and 4 of Table A 8).

Acquisition of Skills and competences

The acquisition of skills and competence is another concept that explains the academic success of students. We asked students several questions related to the acquisition of skills and competence. We used four of them here to support the argument that scholarships make a difference in students in terms of focus and acquiring skills and knowledge are necessary for career success. For example, we asked them to rank their experiences on a 4-point scale (1 to 4: very little to very much) to the extent they felt that they gained an ability to think analytically and logically. The mean score for the overall sample was high for both treatment and control groups but it was 0.17 points higher for the treatment group than the comparison group. This difference in the mean score values was due to the high score of male students who held HEC need-based scholarships (see Column 1 of Table A9 for further details). We asked another question of students of the UoT about their ability to learn on their own to pursue ideas, find information when they needed it, etc. Interestingly, the mean scores in all the cases — students with or without scholarships and both males and females — were above 3 on a 4-point scale. But a significant difference in mean scores was observed in the male sample due to 0.12 additional points in the treatment group (see Column 2 of Table A 9). Similarly, the students were asked about their ability to present ideas and information effectively when speaking to others on the same 4-point scale. We found a 0.23 point difference in the mean scores of male students with scholarships and without scholarships, which further explains our earlier findings that the scholarship had made an impact on the male students' academic success. Here, the difference in the mean scores of female students with or without scholarships was the opposite (see column 3 of Table A 9). Finally, to the question on the ability to get along with different kinds of people, the average response was about 3 on a 4-point scale. However, we observed a statistically significant positive (negative) difference in the mean scores of students with and students without scholarships in our male (female) sample (see Column 4 of Table A9).

Career Success

A career can be defined in several ways, which include both intrinsic and extrinsic measurements of academic success. York et al (2015) included early job outcomes, such as job offers, employment status, job performance, job satisfaction, and organisational satisfaction, which can be measured by the perception of students about their education, the prospect of a career in their field, finding and qualifying satisfying jobs, etc. In this context, we asked students to share their experiences or feelings about the emphasis of the University of Turbat on various aspects of student development. For example, when we asked them to express their feelings about the emphasis on academic, scholarly, and intellectual qualities on a 7-point scale (1 to 7: lowest to highest), we found that the overall mean scores were above the expected mean score (3.5) in all cases. However, we also observed a significantly huge difference in the mean score (0.24 points) in the male sample (see Column 1 Table A10). On the questions about how the UoT emphasised students' information literacy skills (Column 2 of Table A10) and

students' critical, evaluative, and analytical qualities (see Column 3 of Table A10), the differences in mean scores were positive and significant in both samples, i.e., the students with scholarship had higher hopes about their career success-related skills that they acquired at UoT. Surprisingly, the students showed no difference in their opinion on a question on vocational or occupational competence, which is directly related to their career success (see column 4 of Table A10). The result may be due to the reason that the University of Turbat is a general public sector university in Balochistan, which is also isolated from industrial locations. Students with limited opportunities for industrial exposure in the form of internships, work and study, might not have articulated their thoughts on their career success.

Findings on Process and Monitoring Evaluation (Research Question 4)

The analysis of the process, management, and governance of these scholarship programmes was challenging for all stakeholders. Using our qualitative data, which we extracted from the FGDs and KIIs carried out at five public sector universities in Balochistan, and from policy documents of the same universities, HEC, and BEEF. We did a thematic analysis using OECD's six evaluation criteria, viz. relevance, coherence, effectiveness, efficiency, impact, and sustainability (OECD, 2021).

Relevance

Reviewing the policy documents of HEC Ehsaas and need-based and BEEF scholarship programmes, we observed that the objectives of BEEF and HEC scholarship programmes are very clear and relevant. These are aligned with provincial, national, and global as well as institutional policies and priorities. For example, both scholarships are designed to support talented or less privileged students who could not otherwise pursue their higher education without financial support. HEC Ehsaas programme supports females equally or even more (for example, at the University of Turbat more than 50% of scholarship holders are female; see Table for detail). The objectives of these scholarship programs are aligned with SDGs (e.g., SDG1, SDG4, SDG5, and SDG8).

Since the BEEF programme is providing scholarships to students at six degree levels (secondary to MS/MPhil level), the main objectives of the programme have greater relevance in the context of the socioeconomic conditions of Balochistan, which were endorsed by our KII participants, especially the focal person at the financial aid office and heads of departments at the universities. From thematic analysis, we observed that the BEEF scholarship programme is poorly designed, which includes only those students who are either very talented or belong to extremely vulnerable families. The program is designed to provide financial incentives to talented students and the eligibility criteria for inclusion are students' previous academic performances (CGPA in the last two semesters). Since there are no other criteria for inclusion or exclusion from the pool of scholarship awardees, early academic performance is highly correlated with the current academic performance and also with the socioeconomic conditions of the students' families (in terms of availability and accessibility of resources for education). Though the BEEF scholarship recipients in our FGDs realised this, they argued and tried to justify their scholarship amount as a reward for their better performance. As per the argument of one recipient of the BEEF scholarship in an FGD, 'there are several other need-based scholarships available at the university level, BEEF is the only scholarship which creates an environment of competition among students which boosts performance, excellence, and high achievement.' On the contrary, the officials in our KIIs at the university level mostly supported the argument that the stipend amount of the BEEF scholarship programme was not financial support but rather it was a financial incentive for highly talented students for their hard work. Also, they suggested a redesign of the BEEF scholarship programme along the lines of the HEC Ehsaas programme, which currently does not cover a wider range of students in Balochistan who could not otherwise continue their education without such financial support from the government.

Efficiency

We also checked whether the scholarship programmes were delivering the results cost-effectively. Based on in-depth interviews with concerned officials at five public sector universities in Balochistan, focal persons at financial aid offices, chairpersons/deans, members of the ISAC, officials at BEEF, and FGDs with scholarship, our findings revealed that the transfer of the scholarship amounts from both HEC or BEEF to students' accounts never

happened on time. For example, looking at the process of the HEC Ehsaas scholarship programme (see Table A 11), we found that it took almost a year (two semesters) from the date of advertisement for applications till the final award of scholarships. Since the HEC Ehsaas programme is a fully-funded scholarship programme for students' entire undergraduate degree programme, it should start at the beginning of their study programmes because poor students may drop out due to the non-payment of dues for a year. We found huge dropout rates both in the first and second semesters in our dataset, which we assume is because of financial constraints. Our results were corroborated by almost all the chairpersons we interviewed.

We investigated this further to understand and identify possible causes or reasons for such delays and we found several reasons for the delays. If managed properly, the process of the award can be made efficient. The main reasons behind such delays, in general, include a mismatch between the process of admissions at the university level and the acceptance of applications by the funding and monitoring bodies (HEC or BEEF). Other reasons include complicated selection procedures, administrative failures, and the lack of coordination between duty bearers. Though the roles and responsibilities of the concerned officials or partners in the process of programme implementation are clear in the documents, the old bureaucratic style of university administration, under-resourced financial aid offices at the university level, the lack of proper training for financial aid officials to deal with such scholarship programs, non-cooperation of staff at banks, and the lack of funds for monitoring the programme at the university level are some of the key hurdles we found that were making the process more rigid. Except for the officials at the FAO in one university that we visited, officials of FAOs in the other four universities showed great concern about the structure of FAOs, which need more human resources and finances for the operational costs of processing a huge number of applications. We also observed the issue of synchronisation amongst stakeholders during this process. For example, the HEC has enforced universities in Pakistan for opening their students' accounts in the National Bank of Pakistan, but by interviewing some officials of an NBP branch, which deals with these students, we observed that nothing either from universities or from the HEC was communicated to the concerned officials. From our FGDs, we found instances in which students expressed their feeling about access denial to the bank for opening their accounts. Though the HEC has decided to go for a one-window operation and bind students and universities to open the scholarship recipients' accounts with NBP, it was observed in the FGDs and interviews with FAO focal persons that opening accounts for the students at the National Bank is very challenging for students, especially for those who belong to remote areas of Balochistan. For example, a recipient of the HEC Ehsaas scholarship, who belongs to the Awaran District and enrolled in a university located in Quetta, faced a lot of difficulties in opening an account in an NBP branch in Quetta city. Also, the students possibly can not travel to Awaran to open an account just for the scholarship during the semester. Thus, having no bank account could make many students miss the opportunity to get a scholarship.

Another major efficiency issue in the BEEF scholarship programme we found is the late disbursement of stipend cheques to students. For example, the students of all public sector universities in Balochistan who were enrolled in the 2016-19 session, received their cheques in 2020 when they had already graduated from the university a year earlier. Thus, the poor policy design of the BEEF scholarship programme defeated the purpose of handing out scholarships.

The overall process of the scholarship programme starting from document submission to the award of scholarship is too cumbersome for all the scholarship holders and officials. In KIIs we found that even though the HEC has designed several parameters and set criteria for targeting needy students, producing fake documents or providing false information for getting the awards were commonly observed by concerned officials during the process of document submission and interviews.

Sustainability

We further investigated whether the net benefits of the scholarship programs continued after the completion of the programme. Though we could not observe the long-term benefits of the scholarship programme with the available data, we examined the short- to medium-term benefits of the programme in terms of financial, economic, social and environmental sustainability. In KIIs, the officials at the university level, particularly deans and chairpersons, showed their concerns about the sustainability of these scholarship programmes. We observed from their discussion a feeling of uncertainty about the HEC Ehsaas programme's continuation just like the Prime

Minister Fee Reimbursement Program (PMFRP). The main concern they raised was the programme's financial sustainability because the funds have not been invested in any scheme and the HEC is providing scholarships out of the total endowment amount. One of the senior faculty members (also a member of ISAC) raised this concern. He said that 'during the PMFRP, the University of Balochistan has successfully attracted about 3,000 applicants, which have reduced to about 200 after the discontinuation of PMFRP, and the HEC Ehsaas programme is designed to support needy students and it is most likely that most of the needy students are getting higher education due to the Ehsaas Programme and the biggest worry is that its discontinuation may cause a huge drastic change in enrolment of undergrad students.' Since the program was initiated by the incumbent government, the Ehsaas scholarship programme is not a self-sustainable model. It was designed to accommodate about 200,000 undergraduate students for four years, i.e., 50,000 annually. On the other hand, though there exist some issues with its objectives, the financial model of the BEEF program is more likely a self-sustainable one (see Table A12 for further details). The programme does not only provide scholarships from its proceeds from the endowment fund but it also covers its operational and other costs.

Effectiveness and Impact

The qualitative data (mainly from FGDs and KIIs) we collected reveal that these scholarship programmes provided assistance to students in attaining higher education. The recipients of the scholarships spent most of the stipend on such materials that helped them attain higher education. Since the HEC Ehsaas programme was designed to include those students who needed government support, it was more likely that the scholarship recipient students without such intervention could not continue their education. However, BEEF scholarships were not designed to mainly include needy students. BEEF scholarships were apparently awarded to students belonging to well-off families due to their better early academic background. However, due to its merit-based nature, the scholarship likely created a competitive environment among the students. We observed in an FGD that the recipients of BEEF scholarships changed each time since only the top 10 or 15 students got scholarships in each undergrad programme of the universities.

In general, we asked several questions on the impact of the scholarships to which the students responded positively. According to the students, the scholarships were very helpful for them to continue their higher education. They also praised the government for providing such opportunities. Our analysis also came up with some interesting findings on the impact of scholarships. For example, we found that many students spent stipends on their siblings' educations. We also found that the students spent the scholarship money on education-related expenses, such as books, gadgets, online courses, etc. We also found that some of the students even invested their stipend money in buying capital. For instance, a student told us in an FGD that he bought a rickshaw with his stipend in instalments to work part-time. He earned a reasonable income for his family. Similarly, we found that the scholarships had a positive impact on their academic performance. Several students endorsed this positive impact. They said that their grades or CGPA improved after receiving scholarships, which is a good omen for their personal growth and development.

8. CONCLUSION AND RECOMMENDATIONS

Access to higher education is inadequate mainly in the underprivileged areas of Pakistan. The federal and provincial governments of Pakistan have initiated several scholarship programmes for students who are enrolled in public sector universities located in the underprivileged regions of Pakistan. There are three major types of scholarship programmes available in all the public sector universities in Balochistan. These scholarship programmes are the HEC Ehsaas programme, the HEC Need-Based programme, and the BEEF scholarship programme. The first two are need-based, while the last one is merit-based. Using comprehensive organisational records and survey-based data collected at the University of Turbat, which is serving one of the least developed and underprivileged regions of Pakistan (including Turbat, Punjgoor, Gwadar, and Awaran), this study aimed to examine the short- to medium-term impact of the government-sponsored scholarships on undergraduate students' academic performance and other outcomes. Using a quasi-experimental design and DiD estimation technique, the study's findings revealed that the short to medium-term impact of a need-based scholarship programme (i.e., HEC Ehsaas Programme) is effective only for male students in improving their academic performance. In other words, we found that the HEC Ehsaas programme contributed to improving male students'

academic performance, in terms of percentage marks obtained by the students, GPA, and CGPA. From the documents reviewed at the financial aid office at the UoT, FGDs with students, and KIIs with key informants, including officials at the universities in Balochistan, we observed that the HEC Ehsaas programme was better designed in helping the students from poor families of these regions, while the BEEF scholarship programme, which is mainly a merit-based scholarship programme, provided incentives to those who are already performing better academically. Our data further indicated that the scholarship possibly lessened the burden of university-related expenses of male students that were previously met either by their parents or by themselves. Consequently, these students got more time to focus and engage in academic activities at the university.

On other measures of the overall students' success – students' retention rate, engagement in campus-related activities such as talking with course instructors about course-related issues and discussing career plans and ambitions, using campus labs and centres for learning purposes, satisfaction with the university and degree programmes, the acquisition of knowledge and skills, information and education required for a career, and career success related indicators – the Ehsaas scholarship programme appeared to be a better-targeted scholarship programme for male students. These three scholarship programmes under investigation have a comprehensive and well-defined set of objectives. The findings of this paper suggested that the scholarship programmes, particularly need-based scholarship programs were properly designed and contributed toward achieving the programme's objectives.

In light of the above findings, the following are some policy recommendations:

Need-based scholarship programmes require greater government attention: The need-based scholarship programmes have a very comprehensive and well-defined set of objectives. The findings of this paper suggest that the need-based scholarship programmes are better designed and contributed toward achieving the programme's objectives to a greater extent. Particularly, the HEC Ehsaas programme supported poor families in meeting the university-related expenses of their sons. Such financial support reduced the burden of male students who previously did jobs for financing their education. However, the BEEF scholarship programme, which is mainly merit-based, provided incentives to those students who already had better academic records due to their better socio-economic conditions and family status. Given the scarce resources and socio-economic conditions in Balochistan, the need-based scholarship programmes are providing greater benefits than merit-based scholarship programmes. Therefore, it is recommended the Government of Pakistan and its policymakers should give more attention to need-based scholarship programmes.

Continuation of scholarship programs: the government and policymakers should learn the lesson from the discontinuation of the Prime Minister Fee Reimbursement Program (PMFRP) in universities of Balochistan that severely affected their master's degree programs. A drastic reduction in the enrolment in master's programs in almost all universities of Balochistan was observed after the closure of the PMFRP. If the HEC Ehsaas scholarship programme meets the same fate as the PMFRP did, the impact on undergraduate education could be disastrous across the country. Therefore, the government of Pakistan should find means to continue the HEC Ehsaas scholarship programme, particularly in the underprivileged regions of Pakistan.

Improvement in the programme's design: Though the objectives of both the programmes (HEC need-based and BEEF merit-based) are well defined, a revision in their policies could better target the underserved/deprived population of Balochistan. Though need assessment is one of the best criteria for the HEC Ehsaas scholarship programme for targeting the population who need government support and can not continue their higher education otherwise, the threshold of Rs. 45,000 of family income is unreasonable as its initial eligibility criteria. Given the demographic conditions of the rural population (i.e., joint family structure is common with large family size and few earning members), we suggest that per capita family income is a better threshold as an initial eligibility criterion. On the other hand, due to its design, the BEEF scholarship programme benefits more those students who mostly belong to well-off families because of their strong academic records and having education-related facilities at home. Without revision in its policy, the BEEF programme would not be very beneficial for needy students. However, its financial model is more sustainable than the HEC Ehsaas Programme's financial model. The BEEF invests its endowment fund that not only provides scholarships to students from its income from the invested fund but also covers its operational and other costs. Overall, we suggest that a better

scholarship programme design for targeting students from the underprivileged regions of Balochistan could be the one that combines the inclusion criteria of the HEC Ehsaas Scholarship Programme, including the above-mentioned modification, with the self-sustainable financial model of the BEEF programme.

Conduct experimental research: The results of this study may be generalisable to other universities in Pakistan with characteristics similar to those of the UoT (e.g., similar location, less diversified student body, and ethnic, lingual and socio-economic conditions). Since the HEC Ehsaas scholarship programme is a national-level programme, which is operating in 135 universities and 87 campuses of degree awarding institutes, it may be possible to conduct an experimental research design for teasing out the causal impact of the scholarship on students' academic success.

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APPENDICES

Table A1: Details of BEEF Scholarships

	Scholarship Policy 2015-16	Scholarship Policy 2016-17	Scholarship Policy 2017-18	Scholarship Policy 2019-20
Total Amount (in Million)	Rs.118.12	Rs. 211.49	Rs. 291.096	n.a.
No. of Scholars	4,792	6,972	7,182	n.a.
For Graduation (4 Year) Programs Only				
Total Amount (in Millions)	n.a.	Rs. 92.98	126.480	n.a.
Annual Stipend	n.a.	Rs. 48,000	Rs.60,000	Rs. 60,000
Percentage to Total	n.a.	43.96 %	43.45%	n.a.
No. of Scholars	n.a.	1,937	2,108	n.a.
The general eligibility criteria	*a). local/domical of Balochistan, b) at least 60% marks/3CGPA, c) 10-15 topper from each program, and d) 75% of class attendance*			

Sources: The Government of Balochistan, 2016a, 2016b, 2017, 2018

Table A2: Comparison between BEEF and HEC Ehsaas Undergrad programs

Components	BEEF Scholarship Program	HEC Ehsaas Program
Eligibility Criteria	Student academic performance - based, measured by CGPA	Need-based, measured by different indicators including family income is less than Rs.45,000
Duration	Each year based on previous academic performance	Continue throughout the undergraduate program subj ect to the student's satisfactory academic progress
Funding	Balochistan Government	Federal Government
Monitoring body	Balochistan Education Endowment Fund (BEEF), Quetta	Higher Education Commission (HEC), Pakistan
Funding Detail	Total Endowment Fund Rs. 8 Billion. Award scholarships from the proceedings of investment	Total Budget Rs.24 Billion over four years. Total scholarships = 200,000 (50,000 each year)
Scholarship Coverage	Stipend Rs. 60,000	100% Tuition Fee Stipend 4000 per month
Bifurcation based on Gender/	Gender Free merit at Institutional Level.	50% Quota for Female 48% Quota for Male 2% Quota for differently abled
Level	All degree programs	Undergrad programs (4-5years)
Likely Outcome	Motivate students or create a competitive environment	Attract needy students to higher education
Evaluation Process	It is simple to evaluate the performance of students based on student CGPA	It is difficult to evaluate student 's need s which is somehow subjective and require s a lot of procedures, document s, and efforts
Impact	Recipients of the scholarships seemingly continue their education without the scholarship award. It is observed that high -performing students most likely belong to families with a better socio-economic background. Their early educat ion was better, they have better accessibility to current resources (internet, books, etc.)	A huge number of scholarship recipients seemingly could not continue their education without the scholarship award. Due to the extreme poverty and low HDI of the pr ovince, the design of the program is suitable for under -served students in the province to access higher education in public sector universities of Balochistan.

Payment Procedures	BEEF provides cheques or other means of payment to students stipend amounts directly to them. '	Initially, HEC accepted account number s from any bank in Pakistan. Now, it is strictly bound for students to open their accounts in the NBP, whichwas observed from interviews and FGD, the biggest hurdle for the smooth operation of th e program and caused delay ed payment. Opening accounts in NBP is either inaccessible to students or difficult for them since officials at NBP do not entertain students politely.
Sustainable Model	The scholarship program is operating based on a self -sustainable financial model which not only provides students with scholarships but also covers its operating cost. BEEF is operating as a company which invested in the Endowment Fund and uses its proceeding only.	Since the program is initiated by the incumbent government with an annual budget of Rs.6 billion which is projected to continue for four to five years. There is no guarantee that the program will continue after the tenure of the incumbent government.

Table A3: Distribution of Scholarships at the University of Turbat: District and Program wise

	Total		Male		Female	
	No of Obs.	%	No of Obs.	%	No of Obs.	%
Overall	1740	55.86	1163	51.07	577	65.51
Districts						
Turbat	1232	60.55	802	55.49	430	70.00
Punjgoor	61	70.49	51	68.63	10	80.00
Gwadar	127	74.80	68	67.64	59	83.05
Awaran	25	92.00	23	91.30	2	100.00
Others	10	80.00	9	77.78	1	100.00
Programs						
BBA (4 Years)	194	50.52	169	49.11	25	60.00
BS Commerce (4 Years)	49	65.30	42	61.90	7	85.71
BS Economics(4 Years)	180	51.11	149	49.66	31	58.06
BS Political Science (4 Years)	90	41.11	65	41.54	25	40.00
BS Computer Science (4 Years)	152	53.28	134	52.99	18	55.56
BS Education (4 Years)	354	61.30	194	54.12	160	70.00
BS Balochi (4 Years)	91	58.24	59	59.32	32	56.25
BS English (4 Years)	131	49.62	77	46.75	54	53.70
BS Chemistry (4 Years)	120	61.67	62	48.39	58	75.86
BS Bio-Chemistry (4 Years)	77	72.73	32	62.50	45	80.00
BS Bio-Technology (4 Years)	49	73.47	17	76.47	32	71.88
BS Botany(4 Years)	69	68.12	27	59.26	42	73.81
LLB (5 Years)	159	52.83	115	50.43	44	59.09

Data Source: Authors' calculations based on the UoT result gazettes and scholarship awardee lists.

Table A4: Additional Descriptive Statistics

Group of Students	Parent meet their university expenses		Students meet their university expenses by themselves (Part-time job, saving, etc.)		Took Detailed Class Notes during class (0 = never, 1= occasionally, 2=often, 3=very often)	
	(1)		(2)		(3)	
	No of Obs.	% of students	No of Obs.	% of students	No of Obs.	Mean
Female	424	79.00	424	5.66	417	2.55
Male	518	59.65	518	9.26	505	2.25
Difference		*19.35****		*3.61****		*0.30****
Male Students						
Without Scholarship	312	70.19	312	11.21	302	2.20
With Scholarship	206	43.69	206	6.31	203	2.30
Difference		*26.50****		*4.91***		*0.10*
Female Students						
Without Scholarship	264	84.47	264	6.06	259	2.61
With Scholarship	160	70.00	160	5.00	158	2.45
Difference		*14.47****		*1.06*		*0.16***

Data Source: Authors' calculations based on the UoT result gazettes, SIS, scholarship awardees' lists and survey at the UoT.

Table A5: Robustness Check: Program-Semester Fixed Effect Estimates of the HEC Ehsaas Scholarship on Students' Academic Performance

Outcome Variable	(1)	(2)	(3)	(4)	(5)	(6)	(4)	(5)	(6)
	Grade Point Average			Cumulative Grade Point Average			Placebo Effect Semester Marks (%)		
	Total	Male	Female	Total	Male	Female	Total	Male	Female
Scholarship Holders (SH)	0.131	0.021	0.407**	0.196**	0.080	0.354	4.14***	2.63*	4.59**
	(0.092)	(0.097)	(0.192)	(0.075)	(0.082)	(0.157)	(1.18)	(1.40)	(2.24)
Post Scholarship Semester (PSS)	0.340***	0.215*	0.823***	-0.011	-0.084	0.258	-0.93	-1.25	7.81**
	(0.122)	(0.125)	(0.249)	(0.127)	(0.134)	(0.182)	(1.44)	(1.64)	(3.15)
Scholarship Holders x Post Scholarship Semester	0.209**	0.313***	-0.356*	0.118	0.183**	-0.198	1.66	2.28	-2.93
	(0.101)	(0.110)	(0.201)	(0.080)	(0.088)	(0.158)	(1.85)	(2.13)	(3.35)
Observations	760	530	230	759	530	229	324	221	103
R – square	0.2364	0.2322	0.3853	0.2738	0.2902	0.4606	0.2577	0.3063	0.4759
District Fixed Effect	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Semester Fixed Effect	Yes	Yes	Yes	Yes	Yes	Yes	No	No	No
Program Fixed Effect	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

Note: Observations comprise of students enrolled in session: 2017-20 (5th to 8th) and session 2018-21 (3rd to 8th). Other control variables are parents' education (at least one graduated from school), intermediate marks (%) and matric marks (%). In the placebo effect analysis, 1st semester in session 2018-21 and 1st and 2nd in session 2017-20 were assumed pre-scholarship semesters and 2nd in session 2018-21) and 3rd and 4th in session 2017-20 were supposed post-scholarship semesters. Robust standard errors are in parenthesis.* $p<0.1$, ** $p<0.05$, *** $p<0.01$. Models estimated by OLS.

Data Source: Authors' calculations based on the UoT's, result gazettes, awardee list and survey at the UoT.

Table A6: Students' Retention and Engagement

Group of Students	Expected Retention (if the CGPA of a student is greater than 2)		Students meet their university expenses by themselves (part-time job, saving, etc.)		Took Detailed Class Notes during class (0 = never, 1= occasionally, 2=often, 3=very often)	
	No of Obs.	% of students	No of Obs.	% of students	No of Obs.	Mean
Without Scholarship	3250	78.18	424	5.66	417	2.55
With Scholarship	4117	95.94	518	9.26	505	2.25
Difference		*17.76****		*3.61****		*0.30****
Male Students						
Without Scholarship	2399	75.99	312	11.21	302	2.20
With Scholarship	2506	95.37	206	6.31	203	2.30
Difference		*19.38****		*4.91***		*0.10*
Female Students						
Without Scholarship	851	84.37	264	6.06	259	2.61
With Scholarship	1568	96.75	160	5.00	158	2.45
Difference		*12.37****		*1.06*		*0.16***

Note:* $p<0.1$, ** $p<0.05$, *** $p<0.01$. Hypotheses were tested by t-test with unequal variance.
Data Source: Authors' calculations based on the UoT's result gazettes, awardee list and survey at the UoT

Table A7: Students' Engagement and Satisfaction

Group of Students	Students Like the University of Turbat (0=they don't like it, 1=they are neutral about it, 2=they like it, 3= they are enthusiastic about it) (1)		Students talked with Instructor about their course materials including grades make-up classes etc. (0 = never, 1= occasionally, 2=often, 3=very often) (2)		Students discussed their career plans and ambitions with a faculty member (0 = never, 1=occasionally, 2=often, 3=very often) (3)		Student Asked for a friend for help with a personal problem (0 = never, 1= occasionally, 2=often, 3=very often) (4)		Students used computer learning labs or centres to improve their study or academic skills such as reading, writing, etc. (0 = never, 1= occasionally, 2=often, 3=very often) (5)	
	No of Obs.	Mean	No of Obs.	Mean	No of Obs.	Mean	No of Obs.	Mean	No of Obs.	Mean
Without Scholarship	709	1.59	722	1.71	722	1.05	701	1.84	712	0.74
With Scholarship	1687	1.78	1707	2.08	1711	1.13	1687	1.94	1667	0.92
Difference		*0.196 ****		*0.37****		*0.08**		*0.10***		*0.18****
Male Students										
Without Scholarship	462	1.50	475	1.62	475	1.06	467	1.80	472	0.71
With Scholarship	978	1.76	990	2.08	987	1.28	974	1.92	962	0.97
Difference		*0.26 ****		*0.46****		*0.22****		*0.12***		*0.26****
Female Students										
Without Scholarship	247	1.75	247	1.88	247	1.03	234	1.90	240	0.81
With Scholarship	709	1.81	717	2.09	724	0.93	713	1.97	705	0.86
Difference		*0.062*		*0.21****		*-0.10*		*0.07*		*0.06*

Note:* $p<0.1$, ** $p<0.05$, *** $p<0.01$. Hypotheses were tested by t-test with unequal variance.
Data Source: Authors' calculations based on the UoT result gazettes, awardee lists and survey at the UoT

Table A8: Attainment of Learning Objectives

	Acquiring knowledge and skills applicable to a specific job or type of work (1=very little, 2= some, 3=quite a bit and 3=very much)		Acquiring background and specialisation for further education in a professional, scientific, or scholarly field (1=very little, 2= some, 3=quite a bit and 3=very much)		Gaining a broad general education about different fields of knowledge (1=very little, 2= some, 3=quite a bit and 3=very much)		Gaining a range of information that may be relevant to a career (1=very little, 2= some, 3=quite a bit and 3=very much)	
	(1)		(2)		(3)		(4)	
Group of Students	No of Obs.	Mean	No of Obs.	Mean	No of Obs.	Mean	No of Obs.	Mean
Without Scholarship	692	2.94	707	2.95	704	2.76	698	2.88
With Scholarship	1690	2.94	1700	2.98	1696	2.95	1700	3.10
Difference		*0.00*		*0.03*		*0.18****		*0.23****
Male Students								
Without Scholarship	460	2.80	475	2.79	472	2.71	456	2.80
With Scholarship	982	2.90	984	2.91	980	2.86	989	3.00
Difference		*0.10**		*0.13***		*0.15****		*0.19****
Female Students								
Without Scholarship	232	3.22	232	3.28	232	2.87	242	3.01
With Scholarship	708	3.01	716	3.08	716	3.07	711	3.24
Difference		*-0.21****		*-0.20****		*0.20****		*0.24****

Note:* $p<0.1$, ** $p<0.05$, *** $p<0.01$. Hypotheses were tested by t-test with unequal variance.

Data Source: Authors' calculations based on the UoT result gazettes, awardee lists and survey at the UoT

Table A9: Acquisition of Skills and Competences

	Thinking analytically and logically (1=very little, 2= some, 3=quite a bit and 3=very much)		Learning on your own, pursuing ideas, and finding the information you need (1=very little, 2= some, 3=quite a bit and 3=very much)		Presenting ideas and information effectively when speaking to others (1=very little, 2= some, 3=quite a bit and 3=very much)		Developing the ability to get along with different kinds of people (1=very little, 2= some, 3=quite a bit and 3=very much)	
	(1)		(2)		(3)		(4)	
Group of Students	No of Obs.	Mean	No of Obs.	Mean	No of Obs.	Mean	No of Obs.	Mean
Without Scholarship	709	2.85	719	3.08	708	2.93	681	3.06
With Scholarship	1676	3.03	1680	3.15	1685	3.05	1619	3.09
Difference		*0.17****		*0.06*		*0.12****		*0.03*
Male Students								
Without Scholarship	472	2.76	477	3.00	477	2.75	462	2.97
With Scholarship	989	2.99	980	3.12	982	2.98	944	3.06
Difference		*0.22****		*0.12***		*0.23****		*0.10***
Female Students								
Without Scholarship	237	3.02	242	3.27	231	3.30	219	3.24
With Scholarship	687	3.09	700	3.20	703	3.14	675	3.11
Difference		*0.07*		*0.07*		*-0.16***		*-0.13***

Note:* $p<0.1$, ** $p<0.05$, *** $p<0.01$. Hypotheses were tested by t-test with unequal variance.
Data Source: Authors' calculations based on the UoT result gazettes, awardee list and survey at the UoT

Table A10: Career Success

	The University of Turbat emphasised students' academic, scholarly and intellectual qualities (scale: 1 to 7, with lowest to highest points)		The University of Turbat emphasised students' information literacy skills using computers, other information resources (scale: 1 to 7, with lowest to highest points)		The University of Turbat emphasised students' critical, evaluative, and analytical qualities (scale: 1 to 7, with lowest to highest points)		The University of Turbat emphasised students' vocational and occupational competence (scale: 1 to 7, with lowest to highest	
	(1)		(2)		(3)		(4)	
Group of Students	No of Obs.	Mean	No of Obs.	Mean	No of Obs.	Mean	No of Obs.	Mean
Without Scholarship	712	3.50	688	3.37	699	3.41	707	3.42
With Scholarship	1684	3.73	1687	3.41	1654	3.73	1684	3.56
Difference		*0.23****		*0.04*		*0.32****		*0.14*
Male Students								
Without Scholarship	475	3.51	468	3.25	472	3.44	475	3.37
With Scholarship	964	3.75	978	3.58	951	3.84	962	3.54
Difference		*0.24***		*0.33****		*0.39****		*0.17*
Female Students								
Without Scholarship	237	3.50	220	3.62	227	3.34	232	3.53
With Scholarship	720	3.72	709	3.17	703	3.58	722	3.59
Difference		*0.22****		*0.45****		*0.24**		*0.05*

Note:* $p<0.1$, ** $p<0.05$, *** $p<0.01$. Hypotheses were tested by t-test with unequal variance.
Data Source: Authors' calculations based on the UoT result gazettes, awardee list, and survey at the UoT.

Table A11: The Process of the HEC Ehsaas Scholarship Program

| Stage	Date
Online HEC Ehsaas portal opened for applications	01-Oct-20
The deadline for online application submission	30-Oct-20
The deadline for online application submission was extended to	30-Nov-20
Collection of hard copies of applications from the students	21-Jan-21
Pre-ISAC meeting held on	24-Feb-21
The actual ISAC meeting held on	13-Apr-21
Minutes of the meeting along with the list of recommended and waiting students was shared with the HEC	13-Apr-21
Disbursement of the fund by HEC to the University's account happened on	23-Jun-21
Fund disbursed to the scholarship recipient students	25-Aug-21

Data Source: Focal person at FAO UoT.

Table A12: BEEF Financial position during 2015-16 to 2018-19

Year	2015-16	2016-17	2017-18	2018-19
Endowment Fund	Rs. 5 (B)	Rs. 6 (B)	Rs. 8 (B)	Rs. 8 (B)
Income From Endowment Fund	Rs. 346 (M)	Rs. 347 (M)	Rs. 373 (M)	Rs. 547 (M)
Income Generated from Re-investments	Rs. 11 (M)	Rs. 20 (M)	Rs. 41 (M)	Rs. 81.7 (M)
Program Cost	Rs. 131 (M)	Rs. 406 (M)	Rs.29.7 (M)	Rs. 420 (M)
Administrative Operational Expenses	Rs. 17 (M)	Rs. 27 (M)	Rs. 45 (M)	Rs. 13 (M)

Note: B and M stand for Billion and Million respectively
Data Source: The Government of Balochistan, 2016a, 2016b, 2017, 2018)

Figure A 1: Expenditure on Education
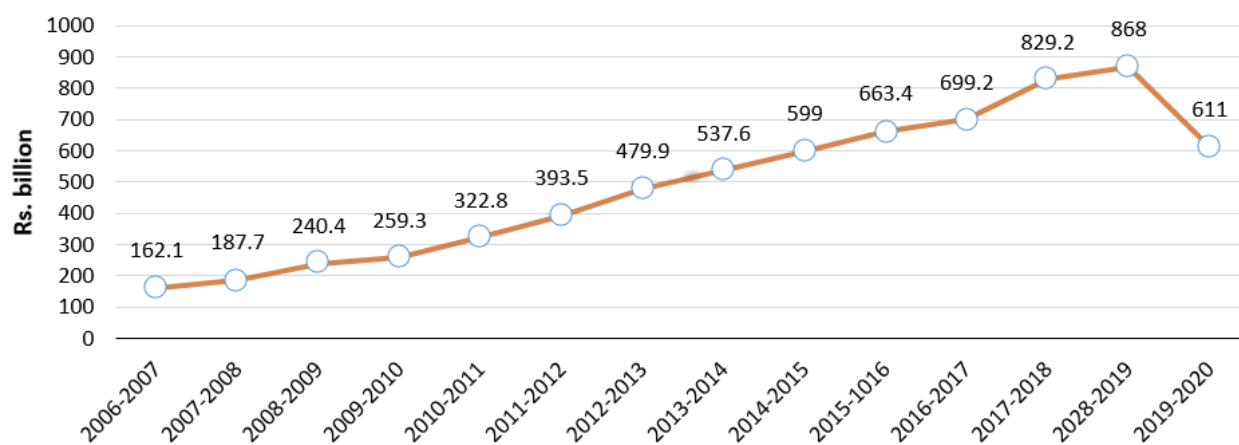
Source: Economic Survey of Pakistan (various issues)

SKILLS MAPPING AND HUMAN RESOURCE PLANNING FOR PROPOSED SPECIAL ECONOMIC ZONES: JOB CREATION FOR UNEMPLOYED YOUTH OF BALOCHISTAN

Aziz Ahmed and Syed Munawar Shah

ABSTRACT

We examined identifying the TVET institutional framework, mapping TVET skills, and estimating the available and potential jobs creation by selected nine industries of special economic and export processing zones (SEZs/EPZs) of Balochistan. Three field visits, three focus group discussions, and 20 plus key informant interviews via mixed research methods are conducted for mapping skills about the three categories of existing, proposed, and potential industries of Balochistan. The study results show that the provincial TVET system is underdeveloped to break-even the supply and demand gaps in technical, vocational, common, and specific TVET skills. The provision of relevant TVET skills may potentially develop skilled human resources to break-even the current and futuristic jobs creation and employment opportunities for the bulge of unemployed youth of Balochistan. The study is relevant to pinpoint some policy options for skill-based human resource development endeavors in the context of ongoing industrial development proposed for SEZs/EPZs of Balochistan.

1. INTRODUCTION

For years, the province of Balochistan is facing the problem of slow human resource development required for its existing, proposed, and potential industrial set-ups. An increasing number of unskilled youth results in the persistence of poverty, unemployment, and social and other types of economic hardships for them. Similarly, the irrelevance of technical and vocational skills supply to the needs of industries is likely one of the factors for many socio-economic issues, including youth unemployment, in Balochistan. The problem of low levels of skills and human capital formation of the provincial youth has attracted various researchers and policymakers to devise empirically proven skilled-based human resource policies for job creation for the unemployed youth of Balochistan (Afza, Razzaq, Gul and Ahmed, 2020; Ahmed et al., 2018).

The provincial workforce is mostly illiterate, unskilled, and incompetent in the context of existing and proposed industries in Balochistan. The skill level of the provincial labour force is very low compared to the technical and vocational education and training (TVET) demand for skills and labour market requirements for industrial development in special economic zones (SEZs), export processing zones (EPZs), and CPEC projects in Balochistan (Khan and Ahmed, 2019).

The issue of skill deficiency in relevant TVET skills required for the existing, proposed and potential industries in each SEZ/EPZ may likely disrupt the job creation process and decent work. Thus, skill mapping and human resource planning based on empirical evidence are needed for job requirements of the proposed and potential industries in SEZs/EPZs for the youth of Balochistan.

The literature suggests that human capital formation policies are planned according to the labour demands of industrial setups in different sectors of an economy. Moreover, the technical and vocational skills provision mechanisms are run in line with the industrial development both in the developed and developing states of the world (ADB, 2014; Sudira, 2019). In addition, the occupational segregation of the labour force is also done as per the required skills in different industries (ILO, 2020). However, the provincial TVET system provides skills without any proper categorisation of the industries in Balochistan. What is more, the literature and reports on the TVET sector of Balochistan provide no evidence that the TVET skill provision is based on a proper categorisation of industries. Therefore, it is suggested to invest in TVET-based human capital formation for industrial development (Ahmed & Khan, 2019; Vision-2025, 2015).

This study is an attempt to map TVET skills and human resource planning for expected job creation in the industrial set-ups of SEZs/EPZs for the unemployed youth of Balochistan. The skill mapping is done for different categories of skills required for the existing, proposed, and potential industries in three selected SEZs/EPZs of Balochistan. The mapping of skills will help policymakers in human resource planning that is based on relevant skills and is easy to implement. The human resource planning based on skills mapping will link TVET skills provision with the labour demands of industries, which will ultimately reduce youth unemployment.

Problem Statement

Skill provision and human resource development are direly dependent upon human resource planning to ensure job creation in the context of industrial development in SEZs/EPZs in Balochistan. According to the authors' understanding, no skills-related human resource planning has been conducted to specify different categories of TVET skills required for the existing, proposed, and potential industries for the unemployed and unskilled labour force of Balochistan. The Labour Force Survey (2018-19) also indicates deficiencies in the skilled labour force for the industrial and manufacturing sectors of Balochistan. The existing and proposed industries in SEZs/EPZs could bring economic fortunes for provincial unemployed youth (i.e., the population of 15-29 years of age). However, it is possible only if relevant TVET skills are identified and mapped according to the labour force needs of the three industrial set-ups. For instance, the Bostan Industrial Zone (a proposed and partially developed SEZ in Balochistan) is going to be established in Balochistan that will have industries such as food processing, motorbike assembling, electric appliances, pharmaceutical units along with other industries. The provision of

relevant skills for these proposed industries is, however, deficient by the formal TVET institutes in Balochistan. This is the case with other SEZs/EPZs in Balochistan as well. Additionally, the provincial youth face unemployment and skills deficiency to get jobs and earn a livelihood. The lack of skills is likely to force the provincial youth to take marginalised positions once job opportunities are created by the industrialisation in SEZs and EPZs in Balochistan. High unemployment among the provincial youth is likely to increase poverty, social unrest, and greater socio-economic hardships for them and their families. Thus, TVET skills mapping by TVET stakeholders keeping in view the requirements of the selected industries of SEZs/EPZs of Bostan, Hub, and Gwadar will benefit skills-based human resource (HR) planning, which may increase decent employment opportunities for the working-age youth of Balochistan.

Study Purpose

This study is an attempt to map TVET skills and formulate human resource planning for job creation in the selected existing, proposed and potential industries in three SEZs and EPZs of Bostan, Gawadar, and Hub. The study will give baseline insights to comprehensively assess the supply and demand situation of TVET skills. It will also identify and map skills from the perspective of diversified stakeholders of the TVET system for human resource development specific to selected industrial development in the province. The study focuses on mapping TVET institutional set-ups (both public and private) of the province. The study covers both the demand and supply aspects of TVET skills mapping for the existing, proposed, and potential industries of SEZs/EPZs in Balochistan. From each of the three categories of industries, one industry is selected to map the TVET skills. The conclusion of the study provides recommendations for policy options for skills-based human resource planning for selected industries in SEZs/EPZs.

Objectives of the Study

This study aims at achieving the following objectives.

- To map TVET institutional set-up for skills development in Balochistan.
- To sketch the existing, proposed, and potential industrial set-ups of three SEZs/EPZs for skills mapping in Balochistan.
- To identify demand for technical, vocational, common, and specific TVET skills and estimate job creation in the selected industries of SEZs/EPZs in the province.
- To explore the existing TVET skills deficiencies for selected industries of SEZs/EPZs in Balochistan.
- To recommend policy options for skills mapping and human resource planning for SEZs/EPZs to ensure job creation for unemployed youth of Balochistan.

Research Questions

- What is the TVET institutional set-up for skills development for SEZs/EPZs in Balochistan?
- What kind of technical, vocational, common, and specific TVET skills are required for the selected existing, proposed and potential industries in Balochistan?
- What are the estimates of jobs creation by the selected existing, proposed and potential industries for the skilled labour force of Balochistan?
- What are TVET skills deficiencies for selected existing, proposed and potential industries in Balochistan?
- What are the policy implications for skills mapping and human resource planning for SEZs/EPZs to ensure job creation for the unemployed youth of Balochistan?

Scheme of the Study

The next section gives a brief literature review. Section three covers the research methodology and data collection. The second last section presents the results and discussion. The final section is devoted to the conclusion and policy recommendations for TVET skills mapping in Balochistan.

2. LITERATURE REVIEW

The human capital theories of Becker (1964), Mincer (1974), and Schultz (1974) emphasise investment in human capital formation for economic growth and development. Several theories have been proposed for human resource development (HRD) including psychological, economic, and system theories. HRD is done for organisational development, the needs of different industries, requirements of different economic tasks and responsibilities, and business-focused skills and expertise. HRD is examined in two economic theories, namely the theory of the firm and the human capital theory. HRD has been linked with economic expansion, rapid technological change, resource use, skills development, and workplace systems. HRD is concerned with providing workers with the basic knowledge and expertise required for their job responsibilities in the labour market. Investment in education is considered of the foremost importance for HRD in human capital theory for economic growth and development and industrialisation. The following section sheds light on some of the important aspects of skills, skill development, skill mapping, and HR planning in the context of the SEZs/EPZs of Balochistan, and labour force dynamics.

Concept, types and the process of skills acquisition

Technical and vocational education and training (TVET) refer to "aspects of the educational process involving, in addition to general education, the study of technologies and related sciences, and the acquisition of practical skills, attitudes, understanding and knowledge relating to occupants in various sectors of economic and social life" (UNESCO, 2001; and ILO, 2001). TVET is the development of skills development that are workable, functional, and applied to the tasks or functions of the overall production process in industrial or agricultural production. These skills are categorised as vocational skills and technical skills. Technical education and training are post-secondary practical-based courses of study, having a minimum duration of a month and a maximum of four to five years, composed of technical abilities necessary for performing a task and working as supervisory staff. However, vocational training is a lower-level course of studies, not based on post-secondary education requirements, to train the labour force to perform skilled and semi-skilled tasks in different trades. Another difference between technical and vocational skills is that technical skills help enhance general education levels specific to the trade of the person, whereas vocational training does not enhance the general education abilities of a person. TVET is an applied version of the general education system (Khan and Ahmed, 2019; UNESCO-UNEVOC, 2017; ILO, 2001, 2016).

The TVET system is composed of training and educating the labour force in hard and soft skills by TEVT institutes across the globe. It is also categorised as technical training, technical education, vocational training, and vocational education. Another version of TVET is termed vocational education and training (VET) which consists of vocational aspects of education and training (Khan and Ahmed, 2019; UNESCO-UNEVOC, 2016).

The Government of Pakistan has announced its first-ever National TVET Policy (2015) having eight objectives for skills development across the country. The provincial technical and vocational training authorities are made functional to regulate, strengthen, manage, and centralise the diversified and distributed nature of TVET supply by different organisations and departments in a province. At the national level, the National Vocational and Technical Training Commission (NAVTTC) under the Federal Ministry of Educational and Professional Training (FMEPT) is also established for commissioning the overall TVET sector in Pakistan. To ensure international best practices in the TVET sector and international acceptability of the TVET certificates and diplomas of Pakistan, NAVTTC has launched a quality framework of the National Vocational Qualification Framework (NVQF) to promote competency-based training and skills development that is in line with international standards of vocational and technical adroitness and professionalism (NAVTTC, 2020, B-TEVTA, 2020; P-TEVTA, 2021; Ahmed et al, 2018).

In Balochistan, Ahmed et al. (2018) reported that the TVET system consists of three tiers of technical education, vocational training, and technical training, which is disseminated with the help of TVET institutes affiliated with different TVET departments, commissions, authorities and donor-funded non-governmental organization (NGOs). The total number of TVET trades is graphed below (Figure 1). For more details, refer to the first part of the results and discussion of this study (Tables 1-3). The data show that TVET-based skills formation of youth is

comparatively lower than national level skill development in Pakistan.

Figure 1: Bar Chart to Show TVET Comparison at National vs Provincial Level
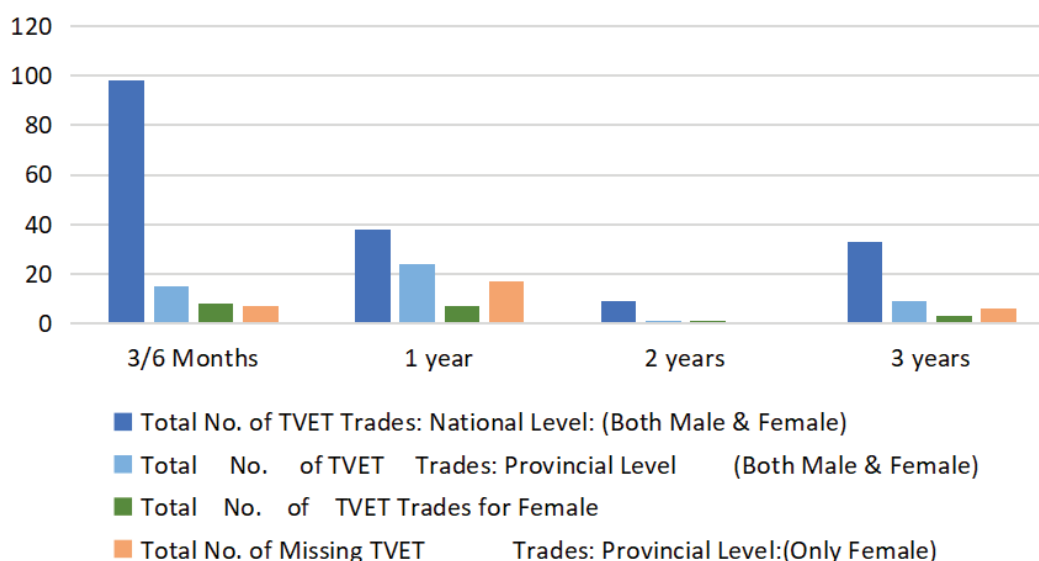
However, the Labour Force Survey (LFS 2018-19) indicates that the national labour force in all the provinces does not fulfil the technical and vocational skills needs of manufacturing, professional jobs, agriculture, crafts and related trades, and other sectors of the economy. The data shows that only 7.3% of the labour force is skilled and semi-skilled and does not meet the demand for skills of many sub-sectors of the economy (Khan and Ahmed, 2019; Ahmed et al, 2018; Hisam, 2016). According to Pirzada (2020), countries like Pakistan must invest in the development of skills required for the 21st century as per the European VET system to help increase economic growth. Investment in the TVET sector enhances the competitiveness and productivity of the economy, specifically the industrial sector.

Skills development as a pre-requisite for industrial development in SEZs/EPZs

The industrial development and impressive growth of the Chinese economy during the last two decades show the importance and significance of technological advancements and the increased proportion of skilled labour force for economic growth. Similarly, Japan is one of the most effective examples of the importance of the technologically skilled labour force and advanced technologies in the manufacturing sector for the maintenance of economic growth for a long time (Brautigam, 2013; Maslikhina, 2016).

It is shown in one of the studies (Zeng, 2019) that careful development and implementation of SEZs and industrial parks require proper human resource planning. The required technical and vocational skills are very important for industrial development and the organisational transformation of an economy. Aggarwal (2019) mentioned that human resource development, particularly skill development with modern technologies, planning, and implementation is an integral part of a three-pillared methodological system for SEZs. "The three success factors of SEZs are as follows: (i) SEZs should be aligned with the national growth agenda; (ii) strategic dynamism for making capital and labour complementary inputs; and (iii) strategic implementation of the developmental plans."

The studies of Sosnovskikh (2017) and Wahyuni (2019) investigated how SEZs and industrial parks were created, implemented, and developed in Russia and China. They found out that skilled labour force, technology, the identification of relevant skills identifications, the preparation of labour force according to the industrial demands in these SEZs/EPZs, export diversification, employment generation, innovation in trade, commerce, and sectoral development were the common factors in both the countries.

Similarly, SEZs/EPZs also affect the direction, nature, and extent of skill development. Manufacturing and industrial advancement are considered crucial for the development of an economy if complemented by adequate capital and human resource development via extensive mechanisms of skill development (Yankov, 2016). Subsequently, in the last couple of decades, numerous countries invested in technical and mechanical advancements to improve their economy using SEZs/EPZs for modernisation (Khan, 2016).

Skill development of the labour force for the needs of SEZs/EPZs and other mega projects of the China-Pakistan Economic Corridor (CPEC) may likely give the directions for effective development planning in Balochistan. To get the targets of foreign direct investment (FDI), SEZs/EPZs provide a competitive and friendly business environment to investors in Pakistan. Export growth is possible with industrial development in SEZs/EPZs in Pakistan. Industrial development and its productivity depend upon skilled and developed human resources along with a conducive business environment. Thus, it implies that a skilled labour force may likely enhance industrial development through SEZs/EPZs in Pakistan (BoI, 2019; Ahmed. 2020).

The literature on TVET-based human resource development for industrial zones of Balochistan is not focused on specific industries that are existing across the province. The reports of the Board of Investment (2017; 2019) indicate the importance of relevant skills as one of the necessary prerequisites for industrial development in all the proposed SEZs/EPZs of Pakistan. The absence of literature on skill mapping for industrialisation in SEZs/EPZs of Balochistan leads to a lack of guidelines for investors and policymakers regarding skilled human resources, which is necessary for industrial development in Balochistan (Ahmed, et al., 2018; Khan and Ahmed, 2019).

Skills in technical and vocational trades for industries of SEZs/EPZs

SEZs/EPZs under CPEC are likely to bring economic growth, increase FDI, create jobs, and develop trade and business development. SEZs/EPZs can also have technological, structural, and institutional impacts on Pakistan's economy. Industrialization through SEZs/EPZs can provide a working atmosphere that may allow the workforce to avail productive jobs by improving their efficiency and working capacity (BoI, 2015).

The governments, throughout the world – Arab Gulf States, China, Russia, Korea, Taiwan, etc. – emphasise establishing SEZs/EPZs like to create and expand trade, and create job opportunities for the local labour force. Job creation and employment opportunities are dependent upon the provision of the right set of skills to the labour force. To achieve the economic benefits of employment and earning, returns from the industrialisation in SEZs/EPZs, and achieve growth, the provision of skills to the labour force is critical to materialise socio-economic benefits of SEZs/EPZs (Sosnovskikh, 2017; BoI, 2019; Ahmed & Khan, 2019).

The empirical studies of Eckermann (2012) and Ciżkowicz (2015) showed that millions of jobs were created in the SEZs of the Middle East, North Africa and Poland, which provides evidence of job creation and increased employment opportunities through the establishment of SEZs. The Cambodian case of SEZs reported by Menon (2015) is also evidence to support the argument that industrialisation creates jobs. In this case, about 68,000 jobs for technical and vocational skilled labour were created with higher wages.

To support the above arguments for the importance of technical and vocational skills, the thesis of Sakka (2014) focused on the significant role of human capital development in the success of SEZs/EPZs of Dubai, Arab Emirates. The study, directly and indirectly, highlighted, using data, that FDI growth and economic growth of Dubai were made possible by allowing the inflow of skilled migrants force from Asian and other countries of the world and policies to equip the labour force with new and innovative skills, the implementation of technology. The study further argued that the Emirate's economy can progress more if progressive investment in education and training is made and free immigration policies for skilled migrants and human capital formation are adopted for technological advancement in trade and industry.

Similarly, Payne (2000) provided evidence that skill-based shifting via strong and progressive human development policies such as aligning TVET skill sets with industrial labour demands is likely to enhance industrialisation. The study analysed skill development policies from the 1950s to the 1980s and beyond to show

that dynamic policy options for improving technical and vocational skill set benefit economies across the globe.

In the context of SEZs/EPZs of the China-Pakistan Economic Corridor (CPEC), the Chinese government has established a number of training institutions and human capital development to enhance the skills of the Pakistani labour force. The Chinese CPEC authorities have established Pak-China Technical and Vocational Institute (PCTVI) in Gwadar for imparting TVET skills necessary for the requirements of proposed SEZs/EPZs in the province. The Chinese government has also started human resource development of the Pakistani labour force in areas like science and technology, social sciences, arts and humanities, cultural studies, hard and soft skills, and vocational and technical skills. Some examples include cooperation between the Punjab University of Technology and Beijing Industrial and Technical University, Pak-China Agriculture Cooperation and agrotechnical skills development of Pakistani youth, Chinese scholarships in science and technology for PhD & master's programmes for Pakistani students in China, and the provision of vocational training to 5,000 Pakistani workers (Mengsheng, 2022; Seminar, 2016).

The sole purpose of these programmes is to reduce skill deficiencies in the national labour force and human resource development in Pakistan. However, the existing incapacity of national TVET institutes to train the labour force to meet the industrial needs of SEZs/EPZs and ineffective implementation of labour laws to provide social protection to the local workforce in CPEC projects are obstacles to providing better working conditions (Khan, 2019).

The Evidence of Job Creation by SEZs/EPZs in Selected South Asian Countries

The literature presents both theoretical, evidence-based and policy-oriented content to support the arguments that economic activities in SEZs/EPZs bring industrialisation, create jobs, and increase economic growth. The processes of globalisation, free trade agreements, labour mobility, and technological development have changed the national economic policies to establish and develop SEZs/EPZs (Zeng, 2021). In this regard, Dzung (2017) suggested that every policy for establishing SEZs/EPZs has the objectives of job creation and employment opportunities for the unemployed and job seekers in an economy. The study further elaborated that SEZs/EPZs impact the overall economy via skill upgradation and technical and knowledge-based advancement.

"By some estimates, over 3,000 zones are operating in 135 countries, employing almost 68 million workers and steering $500 billion of worth of direct vocational and technical trade-related activities" (Zia, Waqar and Malik, 2018). There is empirical evidence that SEZs in Asia, including South Asia, have experienced economic growth, job creation, employment generation, technological development and enhanced earnings of the Asian labour force (Amirahmadi & Wu, 1995). The cases of India, Bangladesh and Pakistan are reviewed below.

Aggarwal (2007) integrated the labour market outcomes of SEZs into a single framework for India. It showed that jobs were created in millions, employment opportunities were expanded, wages increased, and skills were upgraded in those regions where SEZs were established and functional as compared to those regions where SEZs were either dysfunctional or not established at all. The study found that skill development and technological advancement helped the labour force to get employment, increased wages, and socioeconomic protection due to the establishment of SEZs in Madras and Noida. The benefits in terms of hygienic facilities, food, and nutrition were also reported to improve in the industries in SEZs as compared to non-SEZ industries. Thus, human capital formation and skill development were shown to be critical for industrialisation through SEZs in India.

Palit (2009) discussed various issues and perspectives on establishing SEZs following the SEZ Act of 2005 in India. It compared the Indian experience with SEZs with economies and argued that the establishment of SEZs in India had some negative aspects such as inequalities among regions. However, there was evidence of higher income, job creation, skill development, employment generation, and inclusive growth in the regions where SEZs were established in India.

It is estimated that Indian exports increased from USD 5,709.9 million in 2005-06 to USD 11,416.9 billion in 2007-8 by exporting multiple products from its 21 SEZs/EPZs. The employment generation is reported around 7

million in these SEZs of India. There are tremendous prospects shown in ICT-based skill development, vocational, and technical skills for the last 20 years by the Indian services sector's export potential. Silicon City is a prime example of ICT-based technological development, technical skill development, highly technical services exports, and outsourcing techniques throughout the world (Palit and Bhattacharjee, 2008).

The establishment of the Rajasthan SEZ (India) has resulted in the development of stone mining, quarrying, limestone, and marble industries. Consequently, the region has also experienced economic growth, employment generation, and development of infrastructure due to increased exports of Indian stones, marble, limestone products, and Rajasthani gems and jewellery following the SEZ Act 2005 supplemented by the regional SEZ Act of 2010. It has increased the skill development of the labour force required for the trades of stone identification, cutting and polishing, jewellery making, designing, and supply chains of the stone industry in Rajasthan (Rhyn et al., 2021).

The estimates for the total employment generated by the SEZs of Maharashtra, Delhi, Karnataka, Tamil Nadu, and Andhra Pradesh are 178,000 for the local labour force. Similarly, skills related to specific industries increased by 25 per cent due to these SEZs (Narwade, 2013).

In Bangladesh, the announcement of the 100 SEZs programme got approval in its Seventh Five-Year Plan following the Bangladesh Economic Zones Act, 2010. This SEZ programme was aimed at achieving regional growth, human resource development, skills formation among unskilled labour, and the development of backward and lagging regions of the country. It was also aimed at reducing regional poverty and enhancing exports of the country (Razzaque et al., 2018).

The combined effects of eight SEZs of Chittagong, Karnaphuli, Savar, Adamjee, Comilla, Uttara, Ishwardi, and Mongla have contributed 20% of the country's total merchandise exports, enhancing the skills of the regional labour force and employing more the 4.5 million people in these regions of Bangladesh. The country's balance of payment and current account surplus is attributed to multi-billion dollar exports of the products from the industries in these SEZs of Bangladesh (Engman, 2011; BEPZA, 2017). These statistics illustrate export promotion, job creation, and economic growth spurred by SEZs/EPZs in the South Asian context.

The employment generation by the Bangladesh SEZs was estimated to be around 220,000 jobs in 2009. It is claimed that more than 90 per cent of the jobs were held by the local labour force. The employment and job growth rates were estimated at more than 30 per cent, out of which 86 pe rcent were employed by foreign investors, eight per cent by domestic investors, and the remaining by joint ventures (Bhattacharya, 1998).

For Pakistan, there is no official report that gives a snapshot of employment generation by the early harvest ECPEC projects for the unemployed youth of the country. However, a very limited number of studies give estimates and prospects for job creation for the unemployed youth of Pakistan through CPEC projects. One of the studies by Malik (2019) reported that SEZs of CPEC are probably going to create around 575,000 immediate and more than 1 million future jobs in the four SEZs to be set up in Pakistan's Khyber Pakhtunkhwa (KP), Punjab, Sindh, and Balochistan. The upcoming phases of CPEC projects will have enormous work/job creation, employment opportunities, and market prospects for the national labour force.

On the other hand, the study by Zia, Waqar, and Malik (2018) found no evidence of direct or indirect job creation by the early harvest CPEC projects in Pakistan. Similarly, Khan and Ahmed (2019) also did not find any evidence of job creation and employment generation in 12 CPEC projects in Balochistan. Notwithstanding the above-mentioned studies, there is a need for providing relevant TVET skills demanded by industrial development in SEZs/EPZs of the country.

The VAVTTC (2018) statistics reveal that relevant TVET skills are approved as per NVQF and implemented across the provinces to start competency-based training relative to the labour requirements needs of the existing and proposed industries in nine SEZs/EPZs of Pakistan. The statistics show that 500,000 Pakistani youth (i.e., from 15 to 29 years of age) will be trained up till 2025 to meet the skilled labour requirements of different sectors of the national economy.

Skill-based HR Planning for SEZs/EPZs

The literature review above justifies reviewing skill-related HR planning for SEZs/EPZs in multiple ways. The case of trade development, rapid industrialisation, and job creation for youth are reported to have occurred after the establishment of SEZs on the borders of Taiwan and China, and other East Asian economies (Krainara, 2018). Thailand's case of skill-based HR policies for the success of border-based SEZs is reported by Krainara (2016) who examined the Thai strategy of delineating HR policies to focus upon TVET skills as a necessary policy option for the development of SEZs, job creation, employment, and industrialisation. The Indian case of establishing SEZs also endorses technical and vocational education and training to ensure job creation, employment generation, and robust economic growth through industrial development (Nallathiga, 2007). The SEZs Act-2005 has played an active role in building policy options for skill-based HR planning.

Human resource activities and skill requirements in Shenzen Special Economic Zone in Southern China are presented by Ding (1997) in 158 foreign-invested enterprises. The findings suggest that enterprises have shifted away from centralised job selection and placement, lifetime jobs, and equal wages toward open labour markets at the managerial and non-managerial levels, contractual employment, in which salary and retention are dependent on the individual employee and business success, and wage arrangements that consider variations in qualifications, training, and work/job demands. Human resource strategies and activities in foreign-invested enterprises usually follow a mixed paradigm, integrating elements of Western-style HR management.

The creation of SEZs in South Africa in 2014 was officially approved by the South African government (Rogerson, 2014). Following the acknowledgement of the persistence of deep-rooted structural and spatial disparities in the region, the emphasis was placed on SEZs that reflect a strong return to spatial economic interventions. The capacity of SEZs is evaluated in light of home-grown experiences with the underwhelming success of the so-called Industrial Development Zones (IDZs) since 2001. Although revisiting the concerns of how to solve "uneven geographical growth" is essential, it is difficult to argue that SEZs would be a surefire success unless HR planning is accommodated.

Gebrewolde (2019) suggested that policies for successful SEZs must accommodate the macroeconomic goals of a wider growth plan, boosting national productivity, refining employee retention programs, investing in the corresponding infrastructure, knowledge sharing, and reshaping the trade facilitation as important points for the development of an economy. In line with this argument, Ahmad et al. (2018) recommended macroeconomic goals of industrialisation and HR planning to policymakers for establishing SEZs and EPZs under CPEC in Pakistan.

The set of different policies for establishing SEZs that include innovative policies, plans, strategies and methods (for instance, in taxes, legislation, labour laws, HR planning, and public-private partnership aspects) are discussed in Crittle (2008). The study emphasised getting the objectives of highly successful job-creation resources, particularly for women joining the labour force that may help to enhance export production and to balance the terms of trade of developing countries. As evidence, Ngo (2016) used panel data from 64 provinces in Vietnam from 2001 to 2006 to provide analytical information on the trends and disparities in provincial economic performance based on industrialisation in SEZs. The findings suggested that SEZs with augmented HR planning performed better in terms of production, export growth, and job creation. Similarly, Sigler (2014) reported that nearly 70,000 jobs (5% of the overall jobs) in the Panamanian economy were made possible through proper HR planning for two Panamanian SEZs.

Naeem (2020) analysed the developed countries' ever-growing export-oriented industrialisation over the last three decades. He stressed the need to include relevant skills in IT, innovation, and TVET for formulating SEZs/EPZs policies for industrialiSation under the ongoing CPEC project. Similarly, Nasreen (2020) argued that SEZs, industrial zones, and technological parks could only ensure real economic benefits if proper HR planning is done and implemented to boost the industrial production process to boost exports, revenue generation, raise employment, value chain management, and bring socio-economic development. Furthermore, to get the complete benefits from SEZs, keen and smart human resource growth planning is needed, which must be consistent with Pakistan's economic and industrial growth over the next decade. The proposed industries in SEZs including agricultural, food/fruit processing, manufacturing, IT, and textiles would all require varying degrees

and types of TVET and skills.

Labour force dynamics and skills development of Balochistan

Currently, the manufacturing sector employs around 25% of the total labour force of Pakistan. Agriculture and fisheries, once the backbone of the national economy, accommodate almost 10% of the labour force. The rest of the employment is in the sub-sectors of the services sector (LFS, 2017-18). The situational analysis of vulnerable jobs shows that around 27.3 million informal sector workers are most vulnerable to losing their jobs due to the prevailing economic lockdowns and future changes in the wake of the functionality of CPEC projects across the country. As this unskilled labour force is mainly engaged in the sectors most likely to be adversely affected by the shifting of economic activities from unskilled to highly skilled after the start of industrial development in dozens of SEZs and EPZs across the country.

The industrial development in the proposed SEZs and EPZs of Balochistan will also bring labour market changes for the unskilled labour force to face huge unemployment (Afza et al, 2020). The situational statistics of Pakistan's 27.3 million informal sector workers show that 8.88 million working in the wholesale and retail trade sectors will be affected, 6.22 million in the manufacturing sector will be laid off, jobs of 4.43 million workers in construction will be distorted, 4.37 million workers in the community and social services sectors will fade away, and 3.14 million workers engaged in the transport, storage and communication sector will be adversely be affected due to the COVID-19 in Pakistan. These statistics do not show promising labour market outcomes for employment and earnings of the unskilled labour force of the province of Balochistan (Naeem, Andlib, Razzaq, and Afzal, 2020). Khan and Ahmed (2019) have identified the TVET skill gap of more than 250 in different trades and occupations for 12 CPEC projects in Balochistan. The study shows that the youth of the province are unskilled and cannot avail of job opportunities in industrial units once these units are made functional. Thus, there is a need to conduct a comprehensive study to identify relevant TVET skills for human resource planning in the context of industrialisation in SEZs and EPZs that may ensure job creation and employment opportunities for the unemployed youth of Balochistan.

The skill deficiency in the youth of Balochistan compared with the HR requirements for the industries in SEZs and EPZs may place Balochistan in comparison with other provinces of Pakistan (Ahmed and Khan, 2019). Thus, skill mapping for the existing, proposed, and potential industries is necessary for the industrial development of Balochistan.

The need for skills mapping and HR planning for SEZs/EPZs of Balochistan

Pakistan Vision-2025 suggests that for a competitive labour force, skill development and human capital formation are crucial for the socio-economic development of Pakistan (Planning Commission, 2016). The "National Skill Strategy" document has planned for skill formation through provincial technical and vocational training authorities (TEVTAs) and NAVTTC-regional directorates and skill development programmes. However, human resource planning, in the context of SEZs and EPZs, is neglected and not formulated for prospective job creation opportunities for unemployed youth of Pakistan (NAVTTC, 2017). All these national documents emphasise inclusive HR and skill development policies to prepare the youth bulge for upcoming economic activities in SEZs/EPZs under the CPEC projects.

The national vocational qualification framework (NVQF) of NAVTTC (2020) has identified around 122 TVET skills required for the labour force across Pakistan. Yet, the Labour Force Survey reveals that only less than 3% of Pakistan's labour force is technically skilled (LFS, 2018-19). The deficiency in TVET skills of the labour force will result in the lack of decent work opportunities and adequate earnings for the youth of Balochistan.

The studies have also highlighted that TVET skills, identification, and mapping are necessary for designing optimal human resource policies for job creation and employment benefits for the unemployed youth in the context of CPEC projects in Balochistan (Khan and Ahmed, 2019). The Youth Development Policy (2015) of the Government of Balochistan has identified two major issues of unemployment and deficiencies in TVET skills at the provincial level. The recent initiation of SEZs and EPZs in the province and relevant policies demand

imparting relevant skills to the provincial youth to ensure employment in the upcoming economic opportunities created by industrialisation.

Human resource planning for the industrial setups in SEZs/EPZs for job creation for the unemployed youth of Balochistan is an area for further exploration. It needs to be highlighted for better socio-economic prospects for the provincial population in the wake of SEZs and EPZs proposed under the CPEC to achieve the targets of sustainable development goals (SDGs) in Balochistan. It is quoted in this regard that, "...special economic zone (SEZ) is a specifically delineated duty-free enclave and shall be deemed to be foreign territory for the purposes of trade operations and duties and tariffs. In other words, SEZ is a geographical region that has economic laws different from a country's typical economic laws. Usually, the goal is to increase foreign investments. SEZs have been established in several countries, including China, India, Jordan, Poland, Kazakhstan, the Philippines, and Russia..." (Topno, 2005).

Therefore, it is important to look critically at the capacity and strengths in technical and scientific activities, professional skills, and other areas of expertise in which only 3% of the national employed labour force is working in Pakistan. It would be an economic failure not to develop relevant human resources for employment opportunities that would be created in SEZs and EPZs under the CPEC in Balochistan.

In short, the basic structure of the industry-wise and occupational division will likely change in wake of CPEC projects after the proper functionality of SEZs and EPZs within the next 10 to 25 years. Thus, it calls for a need for national capacity building to prepare the youth and to increase their human resource development accordingly or else we would put the provincial economy at a competitive disadvantage. Moreover, not having a TVET-based HR policy for the unemployed youth may increase the chances of social unrest and socio-economic miseries potentially disrupting the promise of a prosperous life for the youth of Balochistan (Khan and Ahmed, 2018; Ahmed and Khan, 2019).

Gap in the literature

The establishment of SEZs and EPZs is considered very important for industrial development in years to come, and skill formation and human resource planning for all the expected industrial sectors are strongly needed for yielding due socio-economic benefits in Balochistan. The provincial TVET sector and national TVET provision provide skills mostly pertaining to common skills, which are not in line with the labour market demands of the existing, proposed, and potential industries of SEZs/EPZs in Balochistan. The provincial TVET setup presents a sort of very weak implementation of generic human resource planning that contains no mechanism for relevant skills identification to map technical and vocational skills and estimates for skill development and job creation for the existing, proposed, and potential industries of SEZs/EPZs to curb youth unemployment in Balochistan. This acute problem can hamper the expected economic gains and, thus, demands skill mapping for the industrial needs of Balochistan to benefit the local labour force once CPEC economic activities start contributing to the socio-economic development of Balochistan. This problem, if not fixed, may also hamper economic gains for Balochistan in comparison with Chinese investors and other non-provincial stakeholders. Similarly, the provincial youth (i.e., the population of 15-29 years of age) facing TVET skill deficiency and unemployment, two major problems, also require HR development. Furthermore, skill mapping and HR planning have also not been formulated for job creation in relevant TVET skills for different industrial clusters of SEZs/EPZs in Balochistan. The study focuses on filling the literature gap of skills mapping and formulating human resource planning for job creation prospects in SEZs and EPZs to likely ensure employment for unemployed youth of Balochistan.

3. RESEARCH METHODOLOGY AND DATA COLLECTION

Research design

The research was designed to cover the interrelated and complex nature of many stakeholders involved in the TVET system of Balochistan. The research design was a mixed research method and its components, means of data collection, field survey, identifying selected industries, identifying the provincial TVET system, target respondents, and defining skill types/categories following Wheeldon (2010). We also used the multidimensional

approach of Williams (2007) and Khan & Ahmed (2019) for the objectives of this study.

Research methodology

This study is based upon mixed research methods to explore the objectives of the study. It had two main components (i.e., a desktop survey and a field survey) and each component contained different phases, which are described in detail below. The desktop and field surveys were conducted in different phases (Wheeldon, 2010; Williams, 2007; Ahmed & Khan, 2019; See Appendix A for detail).

Components of data collection

The desktop survey provided baseline information and data collection from primary and secondary sources of TVET-related literature and reports. The second component of the research method, that is, the field survey, contained both simultaneous and sequential phases of research methodology, which is the sequential aspect of the mixed research method. These phases included multiple field visits to Bostan, Hub, and Gwadar SEZs/EPZs and their industrial setups. Three focus group discussions (FGDs) were also conducted for the study. Three comprehensive field visits were conducted by the research team led by PI that covered all three SEZs/EPZs located in Lasbela, Pishin, and Gwadar. Furthermore, three districts adjacent to the target districts in which SEZs/EPZs are located were also visited. Meetings with heads of departments (HoDs) were also held. Visits to selected industries and labour markets for getting data and information from TVET-qualified individuals were also made.

Tools of data collection

Five research questions explained in the research objectives were used for getting information and data in three FGDs. The research questions for FGDs are given in Appendix A. For mapping the lists of different categories of TVET skills, the lists of vocational/technical and common/specific skills required by a specific industry are based on inputs from human resource offices and/or employed key informants from the selected industries. The mapping of TVET skills was also tallied with the occupational skill sets of ILO (2019), UNEVOC (2016), and NAVTTC (2019), which were confirmed by the KIs in selected industrial units. For doing so, the studies of Ahmed (2019), Khan & Ahmed (2019), ILO (2019) and UNEVOC (2016) were followed.

Respondents

The respondents of this study were key informants (KIs) from B-TEVTA, TVET departments, NAVTTC, the Board of Investment, chambers of commerce of relevant districts, GIZ, authorities of SEZs/EPZs, investors, TVET implementers, TVET institutes, TVET NGOs/INGOs for FGDs, TVET qualified individuals in labour markets.

Defining skills for this study

Within the broader context of skills conceptualisation, this study divided the skills into four categories for selected industries in SEZs/EPZs of Balochistan. These categories are functionally defined in the following way in the context of this study.

- *Vocational skills:* Vocational skills are those skills that apply to a practical profession or work required by the selected industries of this study. The duration of vocational training is from three months to twenty-four months disseminated and regularly given by TVET and allied departments in Balochistan (I&CD, 2021; NAVTTC, 2021; B-TEVTA, 2021; SWD, 2021; UNESCO-UNEVOC, 2017; ILO, 2001).

- *Technical skills:* Technical skills are those skills applied to a technical profession or work required by the selected industries of this study. The duration of technical training is from three months to five years disseminated and regularly given by TVET and allied departments, polytechnic colleges, and engineering/agriculture universities of Balochistan (I&CD, 2021; NAVTTC, 2021; B-TEVTA, 2021; H&TED, 2021; UNESCO-UNEVOC, 2017; ILO, 2001).

- *Common skills:* Common skills are those skills that apply to generic HR and work requirements of the selected industries of this study. These types of jobs are neither vocational nor technical pertaining to skill mapping for a specific industry analysed in this study (UNESCO-UNEVOC, 2017; ILO, 2001).

- *Specific skills:* The category of specific skills is a subset of the total number of both technical and vocational skills that apply to a practical profession and/or technical jobs required by the industries selected for this study (UNESCO-UNEVOC, 2017; ILO, 2001).

Estimation technique for skill tabulations, skill-based jobs, and skills deficiencies

The TVET skills were mapped and listed into the above four categories for each selected industry. The list of vocational, technical, and common and specific skills contains generic skills required for each industry. These skills were identified with the help of available lists as per occupational segregation in each industry, tallied with national and UNEVOC (2016) lists of skills trades, ILO occupational distribution and coding, and verified by HR segments of each industry.

Skill mapping was done for each industry according to the four above-mentioned categories of skills. The number of available jobs was estimated according to the skill needs of the labour force working in an industry. The average number of the required skilled labour force in each trade was multiplied by the number of skills required and the total number of industrial units working/functional in an industry, resulting in the estimated available jobs generated by an industry. The number of potential jobs created was estimated as the product of the number of potential industrial units to be installed in SEZs/EPZs, the number of required skills in each category, and the average number of skilled labour required for a specific industry selected for this study. The tabulation of skills deficiencies for each industry in vocational, technical, common and specific skills was estimated in percentages calculated as one minus the product of the total number of skills provided by TVET institutes in the province divided by the total number of skills required by an industry multiplied by 100 (see Section 4 for detail).

Details of mixed research methodology

It constituted of desktop and field surveys with different phases and skill mapping exercises for the collection of data and information necessary for accomplishing the objectives of this study. See Appendix-A for details.

4. RESULTS AND DISCUSSIONS

Mapping TVET system of Balochistan

The TVET system of Balochistan consists of provincial and federal TVET departments, authorities, and commissions. The TVET skills are supplied through both the public and private sectors' skill development institutes, which are registered, affiliated, and financed by provincial/national TVET departments, authorities, and commissions. The TVET system of Balochistan is mapped following Khan & Ahmed (2019).

The Structure of Private TVET Organisations: There are more than three hundred institutions registered with the L&MPD for the promotion of vocational training in the province. However, more than 70% of these are non-functional. These institutions are working for a limited conventional training subject to getting funds and/or sponsorship by NGOs and organisations such as NAVTTC, BRSP, Mercy Corp, and UNICEF, to mention a few. These institutions are private and run by NGOs, such as community-based social organisations. They only provide vocational training in basic trades of computer and IT, beautician, tailoring and knitting, cooking, and handicrafts mostly for women. They also offer three-month basic courses in electrical, mechanical, computer and IT, and woodwork for men in rural and urban areas. However, no regular programmes for the mentioned vocational trades are run by these TVET institutions. There has been a discontinuity in the functioning of these institutions and their programmes from the time they were registered till the cancellation of their registration by the affiliate patron department (FGD 1, 2021; BRSP, 2017; L&MPD, 2017; NAVTTC, 2021).

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Most of the TVET skills programs are non-regular, cover very limited skills, are very generic in nature, and do not focus upon specific TVET skill requirements of the selected existing, proposed, and potential industries of Balochistan. The estimates of job creation for the unemployed youth of Balochistan as one of the prime objectives are subject to the provision of specific TVET skills, the extension of the scope of TVET skill supply related to individual labour needs, and more investment in TVET institutes for enlarging the overall provincial TVET system in Balochistan (FGD 1-2-3, 2021; Field Survey, 2021)

Balochistan TVET Details from NSIS: There are 8 government colleges of technology (GTCs) for males, 3 for females, and 1 for both males and females, taking the total number of GCTs to 12 in the province. The number of vocational institutes is 155, 28, and 4 for males and females, and co-education, respectively, in the province. However, there is a difference between the number of TVET institutes given by NSIS (2019) and our findings via FGDs, field survey visits, and observations through TVET departments/authorities (FGDs, 1-2-3; field visits, 2021). The following Table 1 shows the details of TVET institutes and the number of TVET technologies in the province.

Table 1. Distribution of Public & Private Sector TVET Institutions

Name of Department	No. of Male TVET Institutes (functional)	No. of Female TVET Institutes (functional)	Total no. of TVET Institutes (functional)
Department of Labour & Manpower	14 (12 Functional)	6 (5 Functional)	20 (17 Functional)
Department of Social Welfare	6 (6 Functional)	38 (28 Functional)	44 (34 Functional)
Department of Education	8 (5 Functional)	1 (1 Functional)	9 (6 Functional)
Department of Commerce & Small Industries	60 (24 Functional)	69 (21 Functional)	129 (45 Functional)
NAVTTC Regional Office Quetta	Mostly Co-educational	Mostly Co-educational	35 (29 Functional)

Source: Khan and Ahmed (2019) and Ahmed, Shakeel and Khan (2021) and authors' calculations

Table 1 gives a snapshot of public and private TVET institutes with both functional and non-functional status, registered, affiliated, and financed by the provincial TVET departments and NAVTTC. The results show that most of the TVET institutes are registered with DC&SI. Field observations and FGDs highlighted that 70-75% of these institutions are non-functional and give very conventional vocational skills to both male and female labour force. The TVET programmes are very ineffective, irregular, and 100% based on NAVTTC funding schedules and that is one of the reasons they do not focus on imparting skills to the labour force that fulfil the industrial needs of the province. The associate engineering diplomas of the Education Department and technical and vocational training centres of DL&MP disseminate training in technical and vocational trades both for conventional and industrial needs but are very limited in number.

Table 2. TVET Skills Deficiency: National & Provincial Level Comparison

TVET Trades Distribution by Qualifying Time	Total No. of TVET Trades: National Level: (Both Male & Female)	Total No. of TVET Trades: Provincial Level (Both Male & Female)	Total No. of TVET Trades for Female	Total No. of Missing TVET Trades: Provinci al Level:(Only Female)
3/6 Months	98	15	8	7
1 year	38	24	7	17
2 years	9	1	1	0
3 years	33	9	3	6

Source: Khan and Ahmed (2019) and Ahmed, Shakeel and Khan (2021) and authors' calculations

Table 3: Private TVET Institutes

Organisations (Affiliations)	Registered Institutes	TVET Programs	Status (Non)/Regular	Skills Deficiency in Selected Industries
Mercy Corp	23	6	Non-regular	90%
BRSP	35	3	Non-regular	85%
Concern	8	4	Non-regular	90%
UNICEF	5	5	Non-regular	90%
L&MPD	356	6	Non-regular	80%
NAVTTC	206	13	Regular	75%
Others	108	7	Non-regular	95%

Source: NAVTTC (2021); BRSP (2020), Khan and Ahmed (2019) Ahmed, Shakeel and Khan (2021) and authors' calculations

Tables 2 and 3 show the magnitudes of skill deficiencies both in numbers and percentages, which shows that there is little relevance of skills development of the provincial youth for employment opportunities in the industrial set-ups of SEZs/EPZs in Balochistan.

Categorisation of provincial industries for skills papping

There are three types of industries identified with the help of the desktop survey, FGDs, and fieldwork conducted by the authors. These are categorised into existing, proposed and potential industries for this study. The list of existing industries was compiled during the fieldwork and visits to provincial departments, including the I&CD. The lists were also acquired from the official records of the Small Industries Wing of I&CD of the Government of Balochistan (I&CD, 2021). The list of proposed industries was compiled from the official documents of respective SEZs/EPZs via their concerned authorities (P&D, 2021; BoI, 2021; I&CD, 2021). The list of potential industries was identified in FGDs, field visits, informal interviews, members of Chambers of Commerce, LIEDA, GIEDA, and other TVET stakeholders in the province. The following four tables (4, 5, 6 & 7) enlist all three categories of existing, proposed and potential industries in the above-mentioned three SEZs/EPZs of Balochistan for which skills are mapped in the next section.

Existing industrial set-up

The Statistics Branch, GoB (2019) has the industrial database of industrial profile and distribution across different districts of the province. The details are given below to know the existing industrial clusters and set-up of Balochistan that may give directions for skill mapping and HR planning for this study (Table 4).

Table 4: Types & Number of Existing Industries across Balochistan

S. No.	Types of Industries	No. of Industries	S. No.	Types of Industries	No. of Industries
1	Flour Mills	41	10	Chromite Washing	24
2	R.C.C Pipe Making	20	11	Rice Mill	97
3	Snuff/Tobacco Factory	4	12	Cotton Ginning	2
4	Ice Factory	37	13	Seafood	68
5	Block Factory	26	14	Asphalt Plant	3
6	Marble Factory	72	15	Fish Baker	10
7	Salt Factory	2	16	Steel mills	14
8	Textile	16	17	Boat Maker	26
9	Engineering	8	18	Chromite Washing	24

Source: Authors Calculations from Official Records of I&CD, 2021

Proposed and Potential Industries of SEZs/EPZs

The following tables (5, 6, and 7) show the list of proposed and potential industries for Bostan SEZ, Gwadar EPZ, and Hub SEZ, respectively. The results of the desktop survey, FGDs (1, 2 & 3), and field visits helped identified the following set of proposed and potential industries for TVET skill mapping and human resource planning for the three SEZs/EPZs (tables 5, 6, and 7; FGDs 1,2, and3; field visits, 2021; Planning Commission, 2021, I&CD, 2021; Ahmed & Khan, 2019).

Table 5: Proposed & Potential Industries of Bostan SEZs

SEZs/EPZs	Proposed Industries	Potent ial Industries
Bostan SEZ	Fruit processing & halal food	Chromite and mining processing
	Agriculture machinery	
	Pharmaceutical	Dry fruit processing
	Motorbikes assembly	
	Chromite	Cold storage/warehouses
	Cooking oil	
	Ceramic industries	Meat and poultry industry
	Ice and cold storage	

Source: Authors' Compilation from FGDs, 1 & 2; Field Visits, 2021; Planning Commission, 2021, I&CD, 2021; BoI, 2019; Ahmed & Khan, 2019

Table 6: Proposed & Potential Industries of Gwadar EPZs

SEZs/EPZs	Proposed In dustries	Potential Industries
Gwadar EPZ	Warehouses Small Size Industries	Small boat making
	Medium Size Industries	
	Noise & Pollution Intensive Industries	
	Cement Industries	Tourism and hospitality
	Manufacturing Industries	
	Textile Industries	
	Food Industries	Date processing & seafood preservation
	Petro Chemical Industries	
	Energy and coal mines industry	
	Pharmaceutical	
	Heavy ship breaking industry	Olive oil extraction
	High-tech services	
	Cement manufacturing	Small Boat Making
	Food & confectionary Industries	
	Chemical industries	Balochi hands-craft industry
	Plastic & Paper Manufacturing	

	Ceramics, Marble Processing, and Mineral Grinding	Shipbreaking parts processing industry
	Printing & packaging industry	

Source: Authors' Compilation from FGDs, 1 & 2; Field Visits, 2021; Planning Commission, 2021, I&CD, 2021; BoI, 2019; Ahmed & Khan, 2019

Table 7: Proposed & Potential Industries of Hub SEZs

SEZs/EPZs	Proposed Industries	Potential Industries
Hub SEZ	Textile	Fisheries value addition
	Pharmaceutical	
	Heavy ship breaking industry	Olive oil extraction
	High-tech services	
	Cement manufacturing	Small Boat Making
	Food & confectionary Industries	
	Chemical industries	Balochi hands-craft industry
	Plastic & Paper Manufacturing	
	Ceramics, Marble Processing, and Mineral Grinding	Shipbreaking parts processing industry
	Printing & packaging industry	

Source: Authors' Compilation from FGDs, 1-3; Field Visits, 2021; Planning Commission, 2021, I&CD, 2021; BoI, 2019; Ahmed & Khan, 2019

Selection of Industries for Skill Mapping

The very wide scope of the industrial landscape of the three categories of provincial industrial set-ups for skill mapping constrained us to select a limited number of industries covering all the three industrial categories mentioned above. The criteria for selecting each of the three industries from the categories of existing, proposed, and potential industries pertained to Bostan SEZ, Gwadar EPZ and Hub SEZ, respectively. We selected one industry from existing, proposed, and potential industries for each of the three SEZs/EPZs to cover a wide range of geographic, economic, social and other attributes to cater for the heterogeneity of each of these zones. The parameters such as TVET skill provision, TVET skill demands, job creation prospects, the functionality of the industry, TVET skills relevancy, economic importance, the availability of data, the volume of industrial set-ups, and many other socio-economic and industrial aspects were taken into consideration during the whole process of this exercise (Table 8; FGDs 1, 2 & 3, 2021; L&MPD; I&CD, 2021; BoI, 2021; GIEDA, 2021; LIEDA, 2021). Thus, the three industries of snuff/tobacco, seafood, and shipbreaking industries were selected for skill mapping of the existing industrial set-ups of the province. Food processing, steel and iron, and marble and mineral industries were taken to map skills for proposed industries, and the chromite, small boat making and fisheries/olive oil extraction industries were selected for skill mapping of potential industries. The study employed multi-stakeholder and multidimensional approaches for the selection of these industries to cover broader categories of industrial set-ups in Balochistan. Parameters such as TVET skills relevancy, TVET supply and demand, development work for accommodating these industries on a priority basis on the location of SEZs/EPZs, infrastructure development for these industries, the functionality of selected industries, availability of raw materials for these industries, and many other aspects related to imparting skills to the provincial youth (FGDs 1,

2 & 3, 2021; L&MPD; I&CD, 2021; BoI, 2021; GIEDA, 2021; LIEDA, 2021; District Profiles Pishin/Lasbela/Gwadar, 2012; Field Visits, 2021; personal communications, 2021, I&CD, 2021; BoI, 2021).

Table 8: Selection of Industries for Skills Mapping

SEZ/EPZ	Existing Industry	Proposed Industry	Potential Industry
Bostan SEZ	Snuff/tobacco factory	Food processing	Chromite
Gwadar EPZ	Seafood	Steel and iron producing industry	Small boat making
Hub SEZ	Shipbreaking	Marble & mineral grinding	Fisheries and olive oil extraction

Skills mapping, TVET needs and estimates of job creation for selected nine industries

The following section reports skill mapping for selected industries in existing, proposed and potential categories of industries selected for this study. This section describes skill mapping for the existing industries of snuff/tobacco, sea-food, and shipbreaking units/industries (sub-sections 4.3.1-4.3.3), skill mapping for the proposed industries of food processing, steel and iron producing, and marble/mineral manufacturing enterprises/units (sub-sections 4.3.4-4.3.6), and, lastly, skill mapping for the potential industries of chromite processing, small boat making and fisheries/olive-oil extraction industries (sub-sections 4.3.7-4.3.9). The TVET skill mapping for each of the mentioned industries is listed into four types of vocational, technical, common and specific skills and tabulated accordingly. Following these lists for each industry, this study also estimated job creation by vocational/technical and common/specific skill types for each of the above nine selected industries. The last section maps TVET skill deficiency estimates to build the case for skill-based HR planning to ensure job creation for the unemployed youth of Balochistan.

Skills Mapping for Three Selected Existing Industries: The findings are discussed for skill mapping for snuff/tobacco, seafood, and shipbreaking units/industries (4.3.1-4.3.3) in the following.

Skills Mapping for the snuff/tobacco industry

The three existing industries selected are given below in tabular forms. The estimated number of jobs created and formal TVET skill deficiencies are also discussed.

Table 9: Total Number of TVET Skills for the Snuff/Tobacco Industry

SEZ/EPZ	Existing Industry	Units of Factory	No. of Vocational Skills	No. of Technical Skills	Total No. of Skills
Bostan SEZ	Snuff/tobacco factory	40	11	4	15
Gwadar EPZ	Seafood factory	-	-	-	-
Hub SEZ	Shipbreaking factory	-	-	-	-

Source: I&CD, 2021; District Profile Pishin, 2012; the field survey and FGDs conducted by the authors

Table 10: Total Number of Common/Specific Skills for the Snuff/Tobacco Industry

SEZ/EPZ	Existing Industry	Units of Factory	No. of Common Skills	No. of Specific Skills	Total No. of Skills
Bostan SEZ	Snuff/tobacco factory	40	14	10	24
Gwadar EPZ	Seafood factory	-	-	-	-
Hub SEZ	Shipbreaking factory	-	-	-	-

Source: I&CD, 2021; District Profile Pishin, 2012; the field survey and FGDs conducted by the authors

List of TVET Skills for Snuff/tobacco factory: The list of snuff and tobacco industries is given for four categories, i.e., vocational skills, technical skills, common skills and specific skills in the following way.

The list of vocational skills: Snuff and tobacco cultivators, harvesters, horticulturists, packaging experts, snuff/tobacco identifications, supply chain managers, cutting and categorization experts, tobacco makers, brand managers, distributors, and office management (Table 9).

The list of technical skills: snuff grinding machine operators, electricians, IT experts, and snuff/tobacco technicians (Table 9).

The list of common skills: Manager, assistant manager, HR, security supervisor and guard, finance and audit manager, supply chain manager, cutting and categorisation experts, brand manager, distributor, office management, machine operator, electrician, and IT/computer operator (Table 10).

The list of specific skills: Snuff and tobacco cultivators, harvesters, horticulturists, packaging experts, snuff/tobacco identifications, cutting and categorization experts, tobacco makers, snuff grinding machine operators, grinding machines mechanics and electricians (Table 10).

Estimated number of job creation by the snuff/tobacco industry: The study assumed that at least two skilled labours are hired to work in a snuff/tobacco factory in Pishin (Field Survey, 2021). There are 24 categories of jobs available in a functional snuff/tobacco factory, out of which 15 jobs are based on TVET skills. Therefore, 15 TVET skilled labour out of 48 total hired labour force are needed for the snuff/tobacco factory to work functionally. The total labour demand side reflects 48 job opportunities in overall employment and 30 job opportunities for TVET skills-based employment in a snuff/tobacco factory in Pishin (Field Survey, 2021). The data of existing industries showed that there are 40 units of snuff/tobacco factories in the province, thus, the total number of jobs created by snuff/tobacco industries was estimated to be1,920 (=40x48) for youth in Balochistan. The TVET-based jobs created were approximately 1,440 (=30x48) by the 40 snuff/tobacco factories in Balochistan (I&CD, 2021; Field Survey, 2021).

Potential job creation in the snuff/tobacco industry depends upon the potential number of snuff/tobacco factories to be installed in this industry. The study identified the potential for approximately 1000 snuff/tobacco factories in the province (FGDs 1 & 2; Field Survey, 2021). Thus, the provincial snuff/tobacco industry alone could create approximately 48,000 jobs (=48x1000) including 30,000 (=30x1000) TVET skilled jobs for the unemployed youth of Balochistan (authors' calculations, 2021).

Mapping Deficiency of Formal TVET Skills for the snuff/tobacco industry: The provincial TVET system provides common and technical and vocational skill training in a very limited number. The deficiencies in vocational and technical skills for this industry are reported at 82% and 50%, respectively (Table 11). Similarly,

deficiencies in common and specific skills required for the snuff/tobacco industry are reported at 50% and 80%, respectively (Table 12). Similarly, for this industry, there are no records of the supply/provision of specific skills through a formal TVET system by any TVET institution affiliated with provincial or federal TVET authorities/departments/commissions. This implies a huge TVET skill deficiency and skill gap in this industry. The investment in and the provision of TVET skills for the snuff/tobacco industry may create employment opportunities for the unemployed youth of Balochistan (FGD 1, 2021; Personal Communication, 2021; B-TEVTA, 2021; NAVTTC, 2021). The TVET-related policy options may include the provision of TVET skills required by the snuff/tobacco industry for materialising employment opportunities, both available and potential, in the existing and functional industries in Balochistan.

Table 11: Deficiency of Formal TVET Skills for the Snuff/Tobacco Industry

SEZ/EPZ	Existing Industry	Units of Factory	No. of Vocational Skills	No. of Technical Skills
Bostan SEZ	Snuff/tobacco factory	40	2 out of 11 = 18% (82% Deficiency)	2 out of 4 = 50% (50% Deficiency)
Gwadar EPZ	Seafood factory	-	-	-
Hub SEZ	Shipbreaking factory	-	-	-

Source: I&CD, 2021; B-TEVTA, 2021; NAVTTC, 2021; District Profile Pishin, 2012; Field Survey and FGDs conducted by the authors

Table 12: Deficiency of Formal Common/Specific Skills for Snuff/Tobacco Industry

SEZ/EPZ	Existing Industry	Units of Factory	No. of Common Skills	No. of Specific Skills
Bostan SEZ	Snuff/tobacco factory	40	7 out of 14 = 50% (50% Deficiency)	2 out of 10 = 20% (80% Deficiency)
Gwadar EPZ	Seafood factory	-	-	-
Hub SEZ	Shipbreaking factory	-	-	-

Source: I&CD, 2021; B-TEVTA, 2021; NAVTTC, 2021; District Profile Pishin, 2012; Field Survey and FGDs conducted by the authors

Skills Mapping for the seafood industry

The details of results and discussion of skills mapping for the seafood industry, selected from the category of selected three existing industries, are given below in the tabular form.

Table 13: Total Number of TVET Skills for the Seafood Industry

SEZ/EPZ	Existing Industry	Units of Factory	No. of Vocational Skills	No. of Technical Skills	Total No. of Skills
Bostan SEZ		-	-	-	-
Gwadar EPZ	Seafood Industry	10	14	13	27
Hub SEZ	Seafood Industry	4	14	13	27

Source: LIEDA, 2021; I&CD, 2021; District Profiles Gwadar/Hub, 2021; Field Survey and FGDs conducted by the authors

Table 14: Total Number of Common/Specific Skills for Seafood Industries

SEZ/EPZ	Existing Industry	Units of Factory	No. of Common Skills	No. of Specific Skills	Total No. of Skills
Bostan SEZ		-	-	-	-
Gwadar EPZ	Seafood Industry	10	23	27	50
Hub SEZ	Seafood Industry	4	23	27	50

Source: LIEDA, 2021; I&CD, 2021; District Profiles Gwadar/Hub, 2012; Field Survey and FGDs conducted by the authors.

List of TVET Skills for the seafood industry: The TVET skills necessary for the seafood industry are given in four categories. These are vocational skills, technical skills, common skills and specific skills.

Vocational skills: fish cutting, fish briner, fish salter, fish weigher, shellfish packer, ship's cook, fish customer service agent, seafood cook, seafood housekeeping attendant, ship/boat supervisor for seafood maritime fishermen, seafood packaging, seafood management, seafood restaurant workers, and seafood chefs (Table 13).

Technical skills: maritime experts, seafood marketing specialists, sea animal physiotherapists, seafood sales associates, seafood supervisors, seafood accounting bookkeeper, marine husbandry, seafood production or line supervisor, aquaculture farmer, seafood health and safety supervisor, seafood weight and scale technician, maritime tape measure experts, and seafood products experts (Table 13).

Common skills: cannery labourer, fish plant labourer, shellfish labourer, fish processing, able seaman/woman, food service attendant, seafood cleaner, seafood/meat clerk, watch keeper, fish frier, seasonal workers, safety workers, seafood warehouse keepers, cashier, fish-processing plant worker, rehabilitation counsellor, security supervisor, fish processors, office management, financiers, audit staff, cash accountants, and common labourers (Table 14).

Specific skills: fish cutting, fish briner, fish salter, fish weigher, shellfish packer, ship's cook, fish customer service agent, seafood cook, seafood housekeeping attendant, ship/boat supervisor for seafood maritime fishermen, seafood packaging, seafood management, seafood restaurant workers, seafood chefs, maritime experts, seafood

marketing specialists, sea animal physiotherapists, seafood sales associates, seafood supervisors, seafood accounting bookkeeper, marine husbandry, seafood production or line supervisor, aquaculture farmer, seafood health and safety supervisor, seafood weight and scale technician, maritime tape measure experts, and seafood products experts (Table 14).

Estimated number of job creation in the seafood industry: According to our estimates, on average one skilled labour was hired to work in a seafood industrial unit in Gwadar and Hub areas of Balochistan. Since there are a total of 14 seafood industrial units reportedly functional in the Gwadar and Hub industrial zones of the province (Tables, 13 & 14; Field Survey, 2021; I&CD, 2021; Personal Communication, 2021), the available jobs in a functional unit were 27 and 50 for vocational/technical and common/specific categories, respectively. There are approximately 14 small seafood units in Gwadar and Hub industrial areas. The average employment created by such a small seafood enterprise was calculated to be 14 (=14x1) in Gwadar and Hub for a single TVET skill (Field Survey, 2021). The total number of jobs generated by 14 seafood enterprises was estimated to be 700 (= 14x50) for all the TVET skills. Similarly, the TVET skill-based jobs of 378 (= 14x27) were available for seafood-related skills holders in the 14 seafood industrial units in the province. More jobs can be created if this very local seafood industry is prioritised in terms of TVET skill policy formulation and its implementations to create jobs for the unskilled youth of the 600 km coastal area of Balochistan (FGD 1,2 &3, 2021; Field Survey, 2021; I&CD, 2021).

Potential job creation in the seafood industry, in future, depends upon the potential of seafood production along the 600 km long coastal areas of Balochistan. This long coastal area, full of seafood products and species can be used for the establishment of potential seafood industry in SEZs/EPZs of Balochistan. The study's results indicate that approximately more than 200 seafood enterprises could be started along the coastal regions in the industrial set-ups of Gwadar and Hub (FGDs 1 & 2; Field Survey, 2021). Thus, only this seafood industry may create jobs for approximately 10,000 (=50x200), out of which 5,400 (=27x200) are TVET skill-based jobs for the unemployed youth of Balochistan. However, the job creation potential in this sector depends upon many factors, including investment in the seafood industry to enhance the number of seafood enterprises and extensive provision of TVET skills relevant to the skill demands of the seafood industry.

Mapping the Deficiency of Formal TVET Skills for the Seafood industry: The provincial TVET system provides both technical and vocational skills but in a very limited number. The deficiencies in vocational and technical skills in this industry were reported to be 43% and 46%, respectively (Table 15). The deficiencies for common and specific skills in this industry were reported to be 22% and 44%, respectively (Table 16). The huge skill deficiency identified in the seafood industry is one of the causes of youth unemployment in the coastal areas of Balochistan. The investment and provision of TVET skills relevant to the seafood industry can ensure employment for the unemployed youth of Balochistan (FGD 1, 2 & 3, 2021; Personal Communication, 2021). The provincial TVET policy options may include the provision of relevant skills for the seafood industry to ensure employment opportunities in the proposed industrial setups of SEZs/EPZs.

Table 15: Deficiency of Formal TVET Skills for the Seafood Industry

SEZ/EPZ	Existing Industry	Units of Factory	No. of Vocational Skills	No. of Technical Skills
Bostan SEZ		-	-	-
Gwadar EPZ	Seafood Industry	10	8 out of 14 = 57% (43% Deficiency)	7 out of 13 = 54% (46% Deficiency)
Hub SEZ	Seafood Industry	4	8 out of 14 = 57% (43% Deficiency)	7 out of 13 = 54% (46% Deficiency)

Source: Field Survey and FGDs conducted by Authors

Table 16: Deficiency of Formal Common/Specific Skills for the Seafood Industry

SEZ/EPZ	Existing Industry	Units of Factory	No. of Common Skills	No. of Specific Skills
Bostan SEZ		-	-	-
Gwadar EPZ	Seafood Industry	10	18 out of 23 = 78% (22% Deficiency)	15 out of 27 = 56% (44% Deficiency)
Hub SEZ	Seafood Industry	4	18 out of 23 = 78% (22% Deficiency)	15 out of 27 = 56% (44% Deficiency)

Source: Field survey and FGDs conducted by the authors

Skills Mapping for the shipbreaking industry

The results and discussion of skills mapping for the shipbreaking industry, selected from the category of three existing industries, are given below in tabular and explanatory forms.

Table 17: Total Number of TVET Skills for the Shipbreaking Industry

SEZ/EPZ	Existing Industry	Units of Factory	No. of Vocational Skills	No. of Technical Skills	Total No. of Skills
Bostan SEZ	-	-	-	-	-
Gwadar EPZ	-	-	-	-	-
Hub SEZ	Shipbreaking	80 (Year: 2020)	24	27	51

Source: LIEDA, 2021; I&CD, 2021; District Profile Lasbela, 2012; Field Survey and FGDs conducted by the authors

Table 18: Total Number of Common/Specific Skills for Shipbreaking Industries

SEZ/EPZ	Existing Industry	Units of Factory	No. of Common Skills	No. of Specific Skills	Total No. of Skills
Bostan SEZ	-	-	-	-	-
Gwadar EPZ	-	-	-	-	-
Hub SEZ	Shipbreaking	80 (Year: 2020)	24	51	75

Source: LIEDA, 2021; I&CD, 2021; District Profile Lasbela, 2012; Field Survey and FGDs conducted by the authors.

List of TVET Skills for the shipbreaking industry: The TVET skills necessary for the shipbreaking industry are given below.

Vocational skills: rerolling scrap diploma, shipbreaking diploma, ship repairing diploma, ship surveying, shipbreaking management skills, vocational ship management, iron chain experts, ship control operators, shipbreaking technicians, shipbreaking mechanics, shipbreaking contractors, shipbreaking yard managers, ship crane operators, ship crane drivers, ship crane manual labour, shipbreaking components identifiers, ship security, indoor shipbreaking diploma, shipbreaking scrap managers, shipbreaking scrap sellers, shipbreaking scrap manual workers, shipbreaking tools manager, shipbreaking tool procurement, and ship motorboat repair (Table 17).

Technical skills: rerolling scrap technicians, re-rollable scrap/steel technicians, shipbreaking heavy vessel mechanics, shipbreaking metallurgists, shipbreaking technical operators, shipbreaking steel and iron welders, shipbreaking steel erector, shipbreaking steel and wood parts fabricator, shipbreaking weight & scale technician, shipbreaking rolls/shears experts, shipbreaking grinders and drill technicians, shipbreaking motors operators, shipbreaking drivers/helpers, shipbreaking steel press mechanics, shipbreaking crane operators and loaders, shipbreaking safety practitioners, shipbreaking machinery experts, shipbreaking chemical analysts, shipbreaking material identification experts, shipbreaking wood and steel/iron parts experts, shipbreaking quality control experts, shipbreaking technicians, shipbreaking engine and turbine mechanics, navigational and maritime diplomas, shipbreaking tanker operators, shipbreaking oil and raw-material managers, and shipbreaking tools repair mechanics (Table 17).

Common skills: electricians, mechanics, safety experts, crane operators, fabricators, welding labour, manual labour, unloader, steel fabricators, wood fabricators, rubber fabricators, chemists, rolling operators, warehouse keepers, cashiers, bookkeepers, audit and cash staff, truck drivers, shipbreaking manual workers, office management, plumbers, watchman, sub-contractors and contractors, and shipbreaking raw material sellers (Table 18).

Specific skills: shipbreaking heavy vessel mechanics, shipbreaking metallurgists, shipbreaking technical operators, shipbreaking steel and iron welders, shipbreaking steel erector, shipbreaking steel and wood parts fabricator, shipbreaking weight & scale technician, shipbreaking rolls/shears experts, shipbreaking grinders and drill technicians, shipbreaking motors operators, shipbreaking drivers/helpers, shipbreaking steel press mechanics, shipbreaking crane operators and loaders, shipbreaking safety practitioners, shipbreaking machinery experts, shipbreaking chemical analysts, shipbreaking material identification experts, shipbreaking wood and steel/iron parts experts, shipbreaking quality control experts, shipbreaking technicians, shipbreaking engine and turbine mechanics, navigational and maritime diplomas, shipbreaking tanker operators, shipbreaking oil and raw-material managers, shipbreaking tools repair mechanics, shipbreaking diploma, ship repairing diploma, ship surveying, shipbreaking management skills, vocational ship management, iron chain experts, ship control operators, shipbreaking technicians, shipbreaking mechanics, shipbreaking contractors, shipbreaking yard managers, ship crane operators, ship crane drivers, ship crane manual labour, shipbreaking components identifiers, ship security, indoor shipbreaking diploma, shipbreaking scrap managers, shipbreaking scrap sellers, shipbreaking scrap manual workers, shipbreaking tools manager, shipbreaking tool procurement, and ship motorboat repair (Table 18).

Estimated job creation in the shipbreaking industry: according to our estimates, on average, three to four skilled labours are necessary to work in a functional shipbreaking unit located in Gadani near Hub areas of Balochistan. The data show that there were around 80 ships scrapped from 2018 to 2020 in the Gadani coastal area of Balochistan (FGDs 2 & 3, 2021; Personal Communication, 2021; Field Survey, 2021). The estimates of available jobs in a shipbreaking unit were 51 and 75 in vocational/technical and common/specific skills categories, respectively. Since approximately 80 ships were broken and scrapped, the average employment created in 2020 by a single shipbreaking industry was 240 (=80x3) in Balochistan (Field Survey, 2021). The total number of jobs created by scrapping 80 ships in 2020 was around 18,000 (= 240x75), including 12,240 (= 240x51) TVET-based jobs with skills relevant to the shipbreaking industry. The field survey's observations and discussions with key experts showed that most of the jobs required both technical and vocational skills. The labour work is hazardous and dangerous, posing the risk of bodily damage and skin (Field Survey, 2021; Personal

Communications, 2021; FDGs 1 & 3, 2021). The job creation potential of this industry for local and migrated workers from other provinces of Pakistan will materialise if health safety rules and regulations are implemented as per the defined labour rights of ILO by respective departments and investors in Balochistan (FGDs 1,2&3; 2021; Field Survey, 2021; Lasbela Chamber of Commerce, 2021).

The potential job creation in the shipbreaking industry depends upon the implementation of safety rules for labours, promoting the shipbreaking industry, and providing relevant TVET skills. The study estimated that there is a potential of scrapping and breaking 150 ships per year in Balochistan (FGDs 1 & 2; Field Survey, 2021). Thus, the provincial shipbreaking industry could create 33,750 (=3x75x150) jobs, including 22,950 (=3x51x150) TVET-based jobs, based on average job creation of 225 (=3x75) when a ship is scrapped and broken. The prospective job creation is dependent upon the provision of relevant TVET skills and trades required by the shipbreaking industry (authors' calculations, 2021; FGDs 1 & 2).

Mapping Deficiency in Formal TVET Skills for the Shipbreaking industry: The provincial TVET system provides TVET skills that are not adequate for the shipbreaking industry in Balochistan. The deficiencies in vocational and technical skills were reported at 72% and 63%, respectively, in the shipbreaking industry of Balochistan (Table 19). The deficiencies in common and specific skills requirements were reported at 71% and 67%, respectively (Table 20). The deficiencies were mostly in the categories of vocational, technical, and specific TVET skills. The provincial TVET system provides common TVET skills relevant to the shipbreaking industry. The provision of relevant TVET skills in the deficient categories may likely ensure employment for the unemployed youth of Balochistan (FGD 1, 2021; Personal Communication, 2021). The TVET-related policy options may include the provision of TVET skills as per labour market demands of the shipbreaking and scrapping industry to ensure employment opportunities as per the estimates of potential in the proposed industrial set-ups of SEZs/EPZs of Balochistan.

Table 19: Deficiency of Formal TVET Skills for the Shipbreaking Industry

SEZ/EPZ	Existing Industry	Units of Factory	No. of Vocational Skills	No. of Technical Skills
Bostan SEZ	-	-	-	-
Gwadar EPZ	-	-	-	-
Hub SEZ	Shipbreaking	80 (Year: 2020)	7 out of 25 = 28% (72% Deficiency)	10 out of 27 = 37% (63% Deficiency)

Source: Field Survey and FGDs conducted by the authors

Table 20: Deficiency of Formal Common/Specific Skills in the Shipbreaking Industry

SEZ/EPZ	Existing Industry	Units of Factory	No. of Common Skills	No. of Specific Skills
Bostan SEZ	-	-	-	-
Gwadar EPZ	-	-	-	-

Hub SEZ	Shipbreaking	80 (Year: 2020)	7 out of 24 = 29% (71% Deficiency)	17 out of 51 = 33% (66% Deficiency)

Source: Field Survey and FGDs conducted by the authors

Skills mapping for the food processing industry

The food manufacturing process is the transformation of raw ingredients into edible products for human consumption. The skills for food processing industries are classified into four categories of vocational skills, technical skills, specific skills, and common skills.

Table 21: Total Number of TVET Skills for the Food Processing Industry

SEZ/EPZ	Proposed Industry	Units of Factory	No. of Vocational Skills	No. of Technical Skills	Total No. of Skills
Bostan SEZ	Food Processing Industry	4	15	24	43
Gwadar EPZ	-	-	-	-	-
Hub SEZ	-	-	-	-	-

Source: LIEDA, 2021; I&CD, 2021; District Profile Pishin/Qila Saifullah, 2021; Field Survey and FGDs conducted by the authors

Table 22: Total Number of Common/Specific Skills for the Food Processing Industry

SEZ/EPZ	Proposed Industry	Units of Factory	No. of Common Skills	No. of Specific Skills	Total No. of Skills
Bostan SEZ	Food Processing Industry	4	31	26	57
Gwadar EPZ	-	-	-	-	-
Hub SEZ	-	-	-	-	-

Source: LIEDA, 2021; I&CD, 2021; District Profiles Pishin/Qila Saifullah, 2021; Field Survey and FGDs conducted by the authors

Vocational skills: ice-cream making, noodle making, jam jelly making, bakery workers, confectionery workers, beverage workers, bottling skills workers, food/drink producer, advanced food mechanical operators, food computation, food chemical properties analyst, food manufacturing production worker, food quality assurance, food stock manager, food hygiene experts, food allergens, food/meat chefs, and hotel & restaurant workers (Table 21).

Technical skills: flour mills workers, dry-fruit makers, meat units workers, beverage making experts, food technology engineers, food scientists, food hygiene and safety work, food assistant engineer, food maintenance assistant, food operations manager, plant manager, food process technician, food control specialist, food safety specialist, food laboratory manager, food control supervisor, food quality assurance, food quality control technician, food microbial control supervisor, food fermentation, food freezing, food modified atmosphere, food packaging, and food pasteurisation skills (Table 21).

Common skills: food production workers, food safety workers, food assembly line workers, food quality standards experts, food menu items waiters, food hazard analysts & control points, food preparation, food machine operators, food manual labour, meat products experts, meat safety guidelines inspectors, meat waste materials dispatchers, meat general maintenance, meat/food equipment operators, meat quality controller, meat/food electricians, food/meat washing mechanics, meat chopping/coring/pulping-knives masters, meat cutting technicians, food/meat pasteurizing labour, meat/food packaging workers, food/cake decoration and presentation managers, food manufacturing operator, food/meat storage supervisor, food/meat transporters, and food visual examination experts, storekeepers, general managers, food/beverages suppliers and distributors, and food/beverages IT experts (Table 22).

Specific skills: food preservation, food/beverage processing instructors, nutritional regulators, food risk analyst food safety checker, food/beverages sensory evaluator, food/beverages data skills monitor, food data analyst, food/meat/beverages diseases experts, food/meat safety consumption dietitians, food/meat preservation technicians, food/meat craft trade workers, bakery workers, food/meat retail management skills, inspectors of food/meat/beverages products, baker, confectionery workers, beverage workers, bottling skills workers, food microbial control supervisor, food fermentation, food freezing, food modified atmosphere, food packaging, baker, confectionery workers, beverage workers, bottling skills workers, and food pasteurization skills (Table 22).

Estimated job creation in the food processing industry: According to our estimates, on average, one skilled labour was hired to work in a functional food production unit in the Quetta area of Balochistan. There were 4 food processing units working mostly located in the Quetta industrial zones of the province (Tables 17 & 18; Field Survey, 2021; I&CD, 2021; Personal Communication, 2021). The available jobs in a functional food processing industry were 43 (=43x1) and 57 (=57x1) in vocational/technical and common/specific categories. Since there are approximately 4 producing units in Quetta near SEZ of Bostan (Field Survey, 2021), the total number of jobs created by 4 food processing units was estimated at around 172 (= 4x43) for the TVET-skilled labour force and 228 (=57x4) for the overall skilled and unskilled labour force of the province. The statistics and field survey observations show that most of the jobs were highly advanced in vocational or technical terms of job responsibilities for the food processing industry. However, more jobs can be created if the food processing industry techniques via TVET training are taught in TVET institutes (FGD 1 & 2, 2021; Field Survey, 2021; I&CD, 2021).

The potential job creation in the food processing industry depends upon the potential number of food products in Balochistan. The study estimates that there is a potential of approximately 1,000 food processing units (FGDs 1 & 2; Field Survey, 2021). Thus, the provincial food processing industry could create potential jobs for approximately 57,000 workers (=57x1000), including 43,000 (=43x1000) TVET-based jobs. However, the job creation potential of this sector depends upon many factors including the provision of relevant TVET skills required by the food processing industry (authors' calculations, 2021).

Mapping Deficiency of Formal TVET Skills for the Food Processing Industry: The provincial TVET system provides both technical and vocational skills but at a very limited scale. The deficiencies in vocational skills and technical skills for this industry were estimated to be 63% and 62.5%, respectively (Table 23). The deficiency of common and specific skills required for the food processing industry was estimated to be 65% and 38.5%, respectively (Table 24). The huge skill deficiency is one of the reasons for the unemployment of the youth of Balochistan. The provision of TVET skills demanded by the food processing industry can ensure employment for the unemployed youth of Balochistan (FGD 1 & 2, 2021; Personal Communication, 2021). The TVET-related policy options may include the provision of TVET skills as per the demands of the food processing industry to fulfil the skills requirements necessary for the development of the food processing industry to ensure employment opportunities in the proposed industrial set-ups of SEZs/EPZs of Balochistan.

Table 23: Deficiency of Formal TVET Skills for the Food Processing Industry

SEZ/EPZ	Proposed Industry	Units of Factory	No. of Vocational Skills	No. of Technical Skills
Bostan SEZ	Food processing industry	4	7 out of 19 = 37% (63% Deficiency)	9 out of 24 = 37.5% (62.5% Deficiency)
Gwadar EPZ	-	-	-	-
Hub SEZ	-	-	-	-

Source: Calculations from Field Survey and FGDs conducted by the authors.

Table 24: Deficiency of Formal Common/Specific Skills for the Food Processing Industry

SEZ/EPZ	Proposed Industry	Units of Factory	No. of Common Skills	No. of Specific Skills
Bostan SEZ	food processing industry	4	11 out of 31 = 35% (65% Deficiency)	16 out of 26 = 61.5% 38.5%Deficiency)
Gwadar EPZ	-	-	-	-
Hub SEZ	-	-	-	-

Source: Calculations from Field Survey and FGDs conducted by the authors.

Skills Mapping for steel and iron producing industry

The skill mapping for the steel industry, selected from the category of three proposed industries, is discussed below.

Table 25: Total Number of TVET Skills for the Steel Industry

SEZ/EPZ	Proposed Industry	Units of Factory	No. of Vocational Skills	No. of Technical Skills	Total No. of Skills
Bostan SEZ	-	-	-	-	-
Gwadar EPZ	Steel & iron producing	13	17	35	52
Hub SEZ	-	-	-	-	-

Source: LIEDA, 2021; I&CD, 2021; District Profile Qila Saifullah, 2021; Field Survey and FGDs conducted by the authors.

Table 26: Total Number of Common/Specific Skills for the Steel Industries

SEZ/EPZ	Proposed Industry	Units of Factory	No. of Common Skills	No. of Specific Skills	Total No. of Skills
Bostan SEZ	-	-	-	-	-
Gwadar EPZ	Steel & iron producing	13	29	34	63
Hub SEZ	-	-	-	-	-

Source: LIEDA, 2021; I&CD, 2021; District Profile Qila Saifullah, 2021; Field Survey and FGDs conducted by the authors.

TVET Skills for the steel industry: The TVET skills necessary for production in the steel/iron industry are given in four categories. These are vocational skills, technical skills, common skills, and specific skills.

Vocational skills: steel/iron shuttering, steel/iron designers/fabricators, layout and fitting work, construction site, erected metal experts, banded steel and loaded rail cars operators, trailers, steel safety workers, steel safety equipment security, transporter, pneumatic powered impact wrenches, corner reamers, turnbuckles, plumb bobs, oxy-acetylene torches, steel supply chain experts, and steel/iron business entrepreneurs (Table 25).

Technical skills: heavy mechanical engineers, structural design engineers, metallurgists, steel beams run forklift operators, steel pipe makers, steel pipe manual labour, steel welder, steel erector, structural steel welder, structural steel fabricator, weight & scale technician, tape measure experts, fabricating machines including rolls/shears experts, grinders and drill presses technicians, forklifts operators, tow motors operators, drivers/helpers. boom lifts operators, band saws/steel press mechanics, welding machined and thread machine operators, crane operators and loaders, steel safety practitioners, blueprint reading surveyors, operators for machinery to cut/bend/rebar/tag, chemical analysts, material identification experts, mechanical testing technicians, non-destructive testing (NDT) experts, metallography engineers, mechanical engineers, steel/iron load experts, and quality control experts (Table 25).

Common skills: safety rules, steel computer numerical control (S-CNC), steel works and labours, loaders, crane operators, industrial HV drivers, steel fabrication/shuttering labour, steel/iron cutting labour, welders, fabricators, hands tool experts, general metallurgy experts, steel warehouse maintainers, steel packaging/finishing labour, rolling machine setters, rolling operators, iron/steel tenders, stainless/aluminium coating chemists, metallurgist, steel/iron safety equipment maintainers, trucks unload labour, steel/iron janitorial staff, warehouse keepers, office management HR, financiers, audit staff, cash accountants, electricians, and plumbers (Table 26).

Specific skills: heavy mechanical engineers, structural design engineers, metallurgists, steel beams run forklift operators, steel pipe makers, erected metal experts, oxy-acetylene torches, steel supply chain experts, structural steel fabricator, weight & scale technician, tape measure experts, fabricating machines including rolls/shears experts, grinders and drill presses technicians, forklifts and tow motors operators, drivers/helpers. boom lifts operators, band saws/steel press mechanics, welding machined and thread machine operators, crane operators and loaders, steel safety practitioners, blueprint reading surveyors, operators for machinery to cut/bend/rebar/tag, chemical analysts, material identification experts, mechanical testing technicians, non-destructive testing (NDT) experts, metallography engineers, mechanical engineers, quality control experts, steel/iron load experts, heavy equipment mechanics/operators, steel pulleys/hooks/equipment operators, steel/iron alignment technicians, heavy equipment electricians (Table 26).

Estimated number of job creation in the steel industry: The study's estimates suggest that, on average, four

to five skilled labours are hired to work in a functional steel production unit in the Quetta and Hub areas of Balochistan. There are a total of 13 steel production units working for steel production mostly located in the Quetta and Hub industrial zones of the province (Tables 25 & 26; Field Survey, 2021; I&CD, 2021; Personal Communication, 2021). The estimates of available jobs in a functional steel unit/mill were 208 (=52x4) for vocational/technical skilled labour force and 252 (=63x4) for common/specific categories of skills requirements. Since there are approximately 13 steel and iron producing units, at small enterprise levels, in Quetta and Hub industrial areas (Field Survey, 2021), the total number of employment opportunities created by 13 steel/iron producing mills/units was estimated to be around 2,707 (= 13x208) for vocational/technical skilled labour force and 3,276 (=13x252) for common/specific categories of skills requirements. The statistics and field survey observations show that most of the jobs were highly advanced in vocational or technical terms of job responsibilities for the steel/iron mills workers. However, more jobs can be created if there is a provision of steel/iron producing TVET skills in specific categories required for the industry of Balochistan (FGDs 1 & 3, 2021; Field Survey, 2021; I&CD, 2021).

The potential job creation in the steel/iron industry depends upon the potential number of steel mills to be installed in SEZs/EPZs of Balochistan. The study estimates that there is a potential of approximately 120 steel/iron producing units/mills (FGDs 1, 2 & 3; 2021; Field Survey, 2021). Thus, the provincial steel and iron producing industry can potentially create30,240 (=120x4x63) jobs for the skilled and unskilled labour force and 24,960 (=120x4x52) skilled labour force, based on average job creation of 845 by a functional steel/iron mill. However, the job creation potential of this sector depends upon many factors including the provision of relevant TVET skills demanded by the steel and iron producing industry (authors' calculations, 2021).

Mapping Deficiency of Formal TVET Skills for the Steel industry: The provincial TVET system provides both technical and vocational skills but mostly does not fulfil the steel/iron industry's human resource requirements in Balochistan. The deficiencies in vocational skills and technical skills for this industry are reported at 71% and 80%, respectively by the formal TVET sector of Balochistan (Table 27). The deficiencies in common and specific skills required for the steel industry were estimated to be 66% and 65%, respectively (Table 28). This huge skill deficiency identified in the steel industry is likely one of the causes of unemployment among the youth of Balochistan. The factors such as raw material exports of iron mineral, scrap, and raw steel products from the province of Balochistan may also be counted as one of the consequences of low skill development which hampers the value addition in the steel industry of Balochistan. The provision of TVET skills relevant to the steel industry can increase employment opportunities for the unemployed youth of Balochistan (FGD 1, 2021; Personal Communication, 2021). The TVET-related policy options may include the provision of TVET skills as per the demands of the steel/iron producing industry at an extensive level to fulfil the skill requirements necessary for the development of the steel and iron industry to ensure employment opportunities in the proposed industrial set-ups of SEZs/EPZs of Balochistan.

Table 27: Deficiency of Formal TVET Skills for the Steel Industry

SEZ/EPZ	Proposed Industry	Units of Factory	No. of Vocational Skills	No. of Technical Skills
Bostan SEZ	-	-	-	-
Gwadar EPZ	Steel & iron producing	13	5 out of 17 = 29% (71% Deficiency)	7 out of 35 = 20% (80% Deficiency)
Hub SEZ	-	-	-	-

Source: Field survey and FGDs conducted by the authors.

Table 28: Deficiency of Formal Common/Specific Skills for the Steel Industry

SEZ/EPZ	Proposed Industry	Units of Factory	No. of Common Skills	No. of Specific Skills
Bostan SEZ	-	-	-	-
Gwadar EPZ	Steel & iron producing	13	10 out of 29 = 34% (66% Deficiency)	12 out of 34 = 35% (65% Deficiency)
Hub SEZ	-	-	-	-

Source: Field survey and FGDs conducted by authors.

Skills Mapping for the marble and mineral grinding industry

The results of skills mapping for the marble and mineral grinding industry, selected from the category of selected three proposed industries, are discussed.

Table 29: Total Number of TVET Skills for the Marble & Mineral Grinding Industry

SEZ/EPZ	Proposed Industry	Units of Factory	No. of Vocational Skills	No. of Technical Skills	Total No. of Skills
Bostan SEZ	-	-	-	-	-
Gwadar EPZ	-		-	-	-
Hub SEZ	Marbles and mineral grinding	250	26	35	61

Source: LIEDA, 2021; I&CD, 2021; District Profile Qila Saifullah, 2021; Field Survey and FGDs conducted by the authors.

Table 30: Total Number of Common/Specific Skills for the Marble & Mineral Grinding

SEZ/EPZ	Proposed Industry	Units of Factory	No. of Common Skills	No. of Specific Skills	Total No. of Skills
Bostan SEZ	-	-	-	-	-
Gwadar EPZ	-	-	-	-	-
Hub SEZ	Marbles and mineral grinding	250	25	37	62

Source: LIEDA, 2021; I&CD, 2021; District Profile Qila Saifullah, 2021; Field Survey and FGDs conducted by the authors.

TVET Skills for the marble and mineral grinding industry: The list of TVET skills list for the marble and mineral grinding industry is given in the form of four categories, i.e., vocational skills, technical skills, common skills, and specific skills.

Vocational skills: miners, pipe fitter, shuttering/gypsum carpenter, plaster mason, helpers, mason helper, block/concrete/tile mason, scuff folder, helper scuff folder, marble mason, foreman, plumber, painter/polisher, aluminium worker, ceiling worker, marble fixer, welder, marble/granite fabricator, drivers, conductors, trolley men, and storekeeper, supply chain managers, marble cutting/grinding, marble categorization experts, and office management (Table 29).

Technical skills: Excavator operator, HTV driver, grader operator, excavator operator, concrete pump operator, hydraulic mechanic, diesel mechanic, aluminium fabricator, gypsum mole making technician, curtain wall operator, marble/stone operator, Five-axis milling operator, CDM electrical & machine operator, fibreglass portion machine technician, hydraulic maintenance expert, phonematic maintenance expert, UV plate bed printer maintenance expert, power mill programmer, Pai & CNC controller maintenance expert, glass fibrin/forced polymer expert, mould metal designer, mines/mineral engineers, GRC production engineer, marble fabrication engineer, cutting laser source maintenance expert, metal spring operator, gravity aluminium casting technician, CNC station operator, manual lathe work station operator, cleaving operator, PVC fabric technician, HVAC technician, bulldozer operator, and forklift operator (Table 29).

Common skills: pipe fitter, carpenter, mason, mason helper, block/concrete/tile mason, helper scuff folder, foreman, plumber, painter/polisher, aluminium worker, ceiling worker, welder, drivers, conductors, trolley men, storekeeper, supply chain managers, manager, assistant manager, HR, security supervisor & guards, finance & audit manager, electricians, and IT/computer operators, and office management (Table 30).

Specific skills: miners, pipe fitter, shuttering/gypsum carpenter, excavator operator, HTV driver, grader operator, excavator operator, concrete pump operator, hydraulic mechanic, diesel mechanic, aluminium fabricator, gypsum mol making technician, curtain wall operator, marble/stone operator, Five-axis milling operator, CDM Electrical & machine Operator, fibreglass portion machine technician, hydraulic maintenance expert, phonematic maintenance expert, UV plate bed Printers maintenance expert, power mill programmer, Pai & CNC controller maintenance expert, glass fibrin/forced polymer expert, mould metal designer, mines/mineral engineers, GRC production engineer, marble fabrication engineer, cutting laser source maintenance expert, metal spring operator, gravity aluminium casting technician, CNC station operator, manual lathe work station operator, cleaving operator, PVC fabric technician, HVAC technician, bulldozer operator, and forklift operator (Table 30).

Estimated number of job creation in the marble/grinding industry: The estimates show that, on average, three workers labours were hired to work in a marble/mineral grinding factory in Quetta and Hub (Field Survey, 2021). The estimates of available jobs in a functional marble/mine grinding factory were 61 and 62 vocational/technical workers and common/specific workers, respectively (Tables, 29 & 30). Since there are approximately 250 marble/mine grinding factories in areas near SEZs of Bostan and Hub, the average employment created by a functional marble/mine grinding factory for the skilled labour force was estimated to be 181 (=3x61) for the skilled category and 186 (3x62) for both the skilled and unskilled workers categories in Quetta and Hub industrial zones (Field Survey, 2021). The total number of available jobs or employment opportunities created by 250 marble/mine grinding units was estimated to be around 45,750 (= 250x181) for TVET skill holders and the estimated number of jobs for all the skilled and unskilled workers in the industry was estimated to be 46,500 (= 250x186). The statistics and field survey observations show that most of the jobs were either vocational or technical (FGD 1 & 3, 2021; Field Survey, 2021; I&CD, 2021).

The estimates of potential job creation in the marble/mineral grinding industry depend upon the potential number of marble/mine grinding factories to be installed in SEZs/EPZs of Balochistan. According to the study's estimation, approximately 1,500 marble/mine grinding factories can be set up based on the estimates of 300 billion tons of marble reserves in Balochistan and KPK and the export share of 90% in overall exports of marble from Balochistan to almost 52 countries worldwide (FGDs 1 2 & 3, 2021; Field Survey, 2021; Keerio & Abden, 2017; Malkani & Mahmood, 2017; Mohammad, 2016). Thus, the provincial marble/mineral grinding industry

could create approximately 274,500 (=181x1500) and 279,000 (=186x1500) jobs for the required TVET skill holders and overall labour force, respectively for unemployed youth of Balochistan. However, the job creation potential of this sector depends upon many factors including the provision of relevant TVET skills relevant to the skills demanded in the marble/mineral grinding industry (authors' calculations, 2021).

Mapping Deficiency of Formal TVET Skills for the marble/mineral grinding industry: The provincial TVET system provides both technical and vocational skills but in a very limited number for the marble/mineral grinding industry of Balochistan. The deficiency of vocational and technical skills for this industry was estimated at 69% and 86%, respectively, in the context of formal TVET skill provision for this industry in Balochistan (Table 31). The deficiency of common and specific skills in the marble/mineral industry was estimated to be 56% and 76%, respectively (Table 32). The skill deficiency identified in the marble/mineral industry is perhaps one of the causes of unemployment among the youth of Balochistan. The exports of raw marble/minerals from the province of Balochistan may also be counted as one of the consequences of low skill development, which limits value addition in the marble/mineral industry. The provision of TVET skills for the marble/mineral grinding industry can ensure employment for the unemployed youth of Balochistan (FGD 2 & 3, 2021; Personal Communication, 2021). The TVET-related policy options must include the provision of TVET skills required by the marble/mineral grinding industry at an extensive level to fulfil the skill requirements necessary for the development of the marble and mineral grinding industry to ensure employment opportunities in the proposed industrial set-ups of SEZs/EPZs of Balochistan.

Table 31: Deficiency of Formal TVET Skills for the Marble and Mineral Grinding Industry

SEZ/EPZ	Proposed Industry	Units of Factory	No. of Vocational Skills	No. of Technical Skills
Bostan SEZ	-	-	-	-
Gwadar EPZ	-	-	-	-
Hub SEZ	Marbles and mineral grinding	250	8 out of 26 = 31% (69% Deficiency)	5 out of 35 = 14% (86% Deficiency)

Source: Field Survey and FGDs conducted by the authors.

Table 32: Deficiency of Formal Common/Specific Skills for the Marble and Mineral Grinding

SEZ/EPZ	Proposed Industry	Units of Factory	No. of Common Skills	No. of Specific Skills
Bostan SEZ	-	-	-	-
Gwadar EPZ	-	-	-	-
Hub SEZ	Marbles and mineral grinding	250	11 out of 25 = 44% (56% Deficiency)	9 out of 37 = 24% (76% Deficiency)

Source: Field Survey and FGDs conducted by the authors.

Skill Mapping for Chromite Processing Industry

The results and discussion of skills mapping for the chromite processing industry, selected from among the category of selected three potential industries, are given below.

Table 33: Total Number of TVET Skills for the Chromite Industry

SEZ/EPZ	Potential Industry	Units of Factory	No. of Vocational Skills	No. of Technical Skills	Total No. of Skills
Bostan SEZ	Chromite	7	19	28	47
Gwadar EPZ	-	-	-	-	-
Hub SEZ	Chromite	4	19	28	47

Source: LIEDA, 2021; I&CD, 2021; District Profile Qila Saifullah, 2021; Field Survey and FGDs conducted by the authors.

Table 34: Total Number of Common/Specific Skills for the Chromite Industry

SEZ/EPZ	Potential Industry	Units of Factory	No. of Common Skills	No. of Specific Skills	Total No. of Skills
Bostan SEZ	Chromite	7	64	66	130
Gwadar EPZ	-	-	-	-	-
Hub SEZ	Chromite	4	64	66	130

Source: LIEDA, 2021; I&CD, 2021; District Profile Qila Saifullah, 2021; Field Survey and FGDs conducted by the authors.

TVET Skills for the Chromite industry: The TVET skills necessary for production in the chromite industry are given in the form of four categories. These are vocational skills, technical skills, common skills, and specific skills. Vocational skills: stone cutter, polisher, gang saw operator, helper/assistant, shotfirer, heavy diesel mechanics, mechanical fitters, excavator operators, HSE advisors, stockpile and ship loading, welder fitter, industrial mechanic, construction site, chromite loaded rail cars operators, trailers, mine safety workers, mine safety equipment security, transporter and chromite business entrepreneurs (Table 33).

Technical skills: geologist, geochemist, geophysics surveyor, geophysics mine sampler, mechanical geospatial technician, geophysicist, drilling engineer, mechanical mine driller (exploration), mechanical mineral estimation resource geologist, GIS expert, GIS & modelling technician, mine planning engineer, mine surveying surveyor, geotechnical engineer, mining engineer, mining drilling & cutting manager (mines), mining supervisor, environmental engineer, reclamation supervisor, electrical engineer, colliery engineer(E&M), mechanical engineer, mechatronics engineer, telecom engineer, it engineer, mineral processing engineer, supervisor (plant & operations) and geotechnical engineer (Table 33).

Common skills: mining mate / mining sirdar, overman, mine foreman, DGMS shotfiring/blasting loading & hauling, opencast loading & hauling, safety officer, emergency response & rescue specialist, occupation health specialist, safety specialist, doctor, crane operator-cum-rigger, hydraulic technician, mechanical fitter-cum rigger,

electrician and welder–cum-gas cutter, machinist, fitter, instrument mechanic, mineral resource manager, accountant, mine closure specialist, bomber/relief operator, water engineers and contaminated land specialists, reclamation supervisor, security guards, driver, cleaner/helper, dumper/tipper operator, data entry operator, paste fill coordinator , helper, executives/ individual sales professional, plumber, water tanker operator, explosives handler & carrier, driver special vehicle (explosive & sprinkler), fabricator, gardener, attendant (silo, crusher, mill), mason, loaders, crane operators, industrial vehicles drivers, wielders, hands tool experts, general metallurgy experts, warehouse maintainers, packaging/finishing labour, rolling machine setters, rolling operators, chromite tenders, chemists, metallurgist, equipment maintainers, chromite janitorial staff, warehouse keepers, office management HR, financiers, audit staff, cash accountants, electricians, and plumbers, welfare officer, and corporate manager (Table 34).

Specific skills: heavy equipment technician, mobile cranes supervisor, rock mechanic engineer, maintainer/operator carpenter, material handler, geological technician, mine technician, soils technician, mine maintenance scheduler, assay technologist, ventilation technician, environment operations lead, maintenance engineer, rotating equipment maintenance superintendent, geoscientific system & data specialist, metallurgist, grade control geologist, production dozer operator, heavy diesel fitter, , underground mine supervisor, mill training coordinator, geospatial surveyor, drilling assistant (operation), explosives handler & carrier, mine electrician, fitter, self-picker, mine sampler geospatial technician, geospatial surveyor, jumbo operator, mine draft man, universal drill machine operator, blaster, rig mounted drill operator, wire saw operator, excavator operator, loader operator, dumper/tipper operator, mine machinist, HEMM mechanic, timber man, bucket wheel excavator operator, winding engine operator, rescue supervisor, reclamation supervisor, mechatronics supervisor, manager (mines), mine foreman/overman, manager (electrical, mechanical, electronics), colliery engineer(excavation), weight & scale technician, tape measure experts, fabricating machines including rolls/shears experts, grinders and drill presses technicians, forklifts and tow motors operators, drivers/helpers. boom lifts operators, mine safety practitioners, blueprint reading surveyors, operators for machinery to cut/bend/rebar/tag, chemical analysts, material identification experts, mechanical testing technicians, non-destructive testing (NDT) experts and quality control experts (Table 34).

Estimated number of job creation in the chromite industry: The study's estimates show that, on average, two to three skilled labours were hired to work in a functional chromite processing unit located in the Muslimbagh and Wadh (Khuzdar) areas of Balochistan. There are a total of 11 chromite processing units working in areas near the SEZs in Bostan and Hub (Tables, 33 & 34; Field Survey, 2021; I&CD, 2021; Personal Communication, 2021).

The estimates of available jobs in functional chromite processing units were 47 and 130 in vocational/technical and common/specific categories of skills trades requirements, respectively. Since there are approximately 11 chromite processing units in Hub and Bostan industrial areas, the average employment created by a functional small chromite processing unit was estimated to be 33 (=11x3) in both Bostan and Hub (Field Survey, 2021). The total number of available jobs in 11 chromite processing units was estimated to be 1,551 (=11x3x47) for vocational/technical skill holders and 4,290 (= 11x3x130) for the common/specific skilled labour force in the province. The statistics and field survey observations show that most of the jobs were highly advanced in vocational or technical terms in the chromite processing industry. However, more jobs can be created if the chromite processing techniques are taught via TVET skill provision in specific categories required in the chromite processing industry in Balochistan (FGD 1 & 3, 2021; Field Survey, 2021; I&CD, 2021).

The potential job creation in the chromite industry depends upon the potential number of chromite processing units to be installed in SEZs/EPZs of Balochistan. The results of the study show that approximately 100 to 120 chromite processing units can be established in the region (FGDs 1 & 3, 2021; Field Survey, 2021). Thus, the provincial chromite industry can potentially create approximately 14,100 jobs (=100x3x47) in the technical/vocational category and 130,300 (=100x3x130) jobs in the common/specific category for unemployed youth of Balochistan. However, the job creation potential of this sector depends upon factors such as the provision of relevant TVET skills to the provincial labour force of Balochistan that is demanded by the chromite processing industry (Authors' Calculations, 2021).

Mapping Deficiency of Formal TVET Skills for the Chromite industry: The provincial TVET system provides

skills of both technical and vocational nature but does not cover the required scope of skills requirements of the chromite industry in Balochistan. The deficiency in vocational and technical skills for this industry was estimated to be 74% and 82.5%, respectively (Table 35). Deficiencies in common and specific skill requirements for the chromite industry were estimated to be 83% and 92.5%, respectively (Table 36). This huge skill deficiency identified in the chromite processing industry is one of the causes of unemployment among the youth of Balochistan. The lack of relevant skills is perhaps one of the reasons for the export of raw chromite and its ores from Balochistan to China. The absence of the chromite industry for processing chromite materials into final products, locally is mainly due to the deficiency of TVET skills (among other factors) that are required for establishing this industry in Balochistan. The provision of TVET skills for skill provision pertaining to the chromite can ensure employment for the unemployed youth of Balochistan (FGD 1 & 3, 2021; Personal Communication, 2021). The TVET-related policy options should include the provision of TVET skills as per the skill demands of the chromite processing industry at an extensive level, which may create jobs for the unemployed youth in potential industrial set-ups in SEZs/EPZs of Balochistan.

Table 35: Deficiency of Formal TVET Skills for the Chromite Industry

SEZ/EPZ	Potential Industry	Units of Factory	No. of Vocational Skills	No. of Technical Skills
Bostan SEZ	Chromite	7	5 out of 19 = 26% (74% Deficiency)	5 out of 28 = 17.5% (82.5% Deficiency)
Gwadar EPZ	-	-	-	-
Hub SEZ	Chromite	4	5 out of 19 = 26% (74% Deficiency)	5 out of 28 = 17.5% (82.5% Deficiency)

Source: Field survey and FGDs conducted by the authors.

Table 36: Deficiency of Formal Common/Specific Skills in the Chromite Industry

SEZ/EPZ	Potential Industry	Units of Factory	No. of Common Skills	No. of Specific Skills
Bostan SEZ	Chromite	7	11 out of 64 = 17% (83% Deficiency)	5 out of 66 = 7.5% (92.5% Deficiency)
Gwadar EPZ	-	-	-	-
Hub SEZ	Chromite	4	11 out of 64 = 17% (83% Deficiency)	5 out of 66 = 7.5% (92.5% Deficiency)

Source: Field survey and FGDs conducted by the authors.

Skills Mapping for the small boat-making industry

The results and discussion of skills mapping for small boat-making, selected from the category of selected three potential industries, are given below.

Table 37: Total Number of TVET Skills for the Boat-Making Industry

SEZ/EPZ	Proposed Industry	Units of Factory	No. of Vocational Skills	No. of Technical Skills	Total No. of Skills
Bostan SEZ	-	-	-	-	-
Gwadar EPZ	Small boat making	22	15	20	35
Hub SEZ	-	-	-	-	-

Source: GIEDA, 2021; I&CD, 2021; District Profile Gwadar, 2021; Field Survey and FGDs conducted by the authors.

Table 38: Total Number of Common/Specific Skills for the Boat-Making Industry

SEZ/EPZ	Proposed Industry	Units of Factory	No. of Common Skills	No. of Specific Skills	Total No. of Skills
Bostan SEZ	-	-	-	-	-
Gwadar EPZ	Small boat making	22	23	35	58
Hub SEZ	-	-	-	-	-

Source: GIEDA, 2021; I&CD, 2021; District Profile Gwadar, 2021; Field Survey and FGDs conducted by the authors.

TVET Skills for the small boat-making industry: The TVET skills relevant to the small boat-making industry are given in four categories of vocational skills, technical skills, common skills and specific skills below.

Vocational skills: boat-making breaking diploma, boat repairing diploma, fibre boat making, wooden boat making, fisheries management diploma, motorboat repair, net making diploma, boat decoration diploma, boatyard operators, boat safety diploma, diploma in offshore operation, yacht making, office management, swimming skills, and aluminium fixing (Table 37).

Technical skills: fishing rowboat making, recreational rowboat making, boat making technicians, net making technicians, yacht making technicians, outboard boat making, inboard boat making, sailboat building, personal watercraft, dinghy boat making, rowing boat manufacturing skills, boat designing skills, motorboat mechanics, boat steel and iron welders, boat wood parts fabricator, boat making motors operators, boat making safety practitioners, boat/yacht machinery experts, wood and fibre parts experts, and boat making tools repair mechanics (Table 37).

Common skills: boat carpenters, electricians, mechanics, safety experts, sea tourism skills, sea racing managers, boat fabricators, welding labour, manual labour, fisher-men, wood fabricators, rubber fabricators, boat warehouse keepers, cashiers, bookkeepers, audit and cash staff, sea sports managers, manual workers, fish/sea-food vendors, office management, boat plumbers, watchman, and boat raw material sellers (Table 38).

Specific skills: boat-making breaking diploma, boat repairing diploma, fibre boat making, wooden boat making, fisheries management diploma, motorboat repair, net making diploma, boat decoration diploma, boatyard operators, boat safety diploma, diploma in offshore operation, yacht making, office management, swimming

skills, aluminium fixing for boat, fishing rowboat making, recreational rowboat making, boat making technicians, net making technicians, yacht making technicians, outboard boat making, inboard boat making, sailboat building, personal watercraft, dinghy boat making, rowing boat manufacturing skills, boat designing skills, motorboat mechanics, boat steel and iron welders, boat wood parts fabricator, boat making motors operators, boat making safety practitioners, boat/yacht machinery experts, wood and fibre parts experts, boat making tools repair mechanics (Table 38).

Estimated number of job creation in the boat-making industry: The field survey observations show that an average of two skilled labour in the boat-making industry were required for a functioning small boat-making manufacturing unit in Gwadar and Hub areas of Balochistan. There were a total of 22 boat-making manufacturing units in Gwadar and Hub areas estimated during the fieldwork of this study (Tables 37 & 38; Field Survey, 2021; GIEDA, 2021; Personal Communication, 2021). The estimates of available jobs in a functional boat-making unit were 35 and 58 in vocational/technical and common/specific skill categories, respectively. Since there are approximately 22 small boat-making units in Gwadar and Hub industrial areas, the average employment created by a functional small boat-making unit was estimated to be around 70 (=35x2) and 116 (=58x2) for vocational/technical and common/specific TVET skilled labour force, respectively (Field Survey, 2021). Since there are 22 small boat-making units functional, an approximate number of total employment created by these units was around 1,540 (=22x35) in the vocational/technical category and 2,552 (= 22x116) in the common/specific TVET skills category, relevant to the small boat-making industry. The field observations and personal interviews with the key informants, boat-making experts, fisheries union representatives, and skilled labours of this industry reveal the non-availability of the skilled labour force in all the four TVET categories mentioned above. However, more jobs can be created if relevant TVET skills are provided extensively and if investment in the provision of boat-making skills is made to ensure decent job opportunities for the unemployed and unskilled labour force of the coastal areas of Balochistan (FGD 1, 2 & 3, 2021; Field Survey, 2021; I&CD, 2021).

Potential job creation in the small boat-making industry depends upon the potential number of boat manufacturing units to be installed in SEZs/EPZs of Balochistan. The estimations show that approximately 100 small boat-making manufacturing units can be established (FGDs 1 2 & 3, 2021; Field Survey, 2021). Thus, the small boat-making industry could create jobs for approximately 7,000 (=70x100) and 11,600 (=116x100) for the vocational/technical and common/specific TVET skilled labour force, respectively. However, the job creation potential of this sector depends upon many factors including the provision of relevant TVET skills pertaining to the skill demands of small boat-making and relevant trades of this industry to create employment opportunities for the provincial labour force of Balochistan (authors' calculations, 2021).

Mapping Deficiency of Formal TVET Skills for the Boat-Making Industry: The provincial TVET system provides both technical and vocational skills but not according to the skills requirements of the small boat-making industry in Balochistan. The deficiencies in vocational and technical skills for this industry were estimated to be 60% and 65%, respectively (Table 39). The deficiencies in common and specific skills requirements for the small boat-making industry were reported to be 52% and 65%, respectively (Table 40). In this case as well, like in other industries, the unavailability of all relevant skills is one of the likely causes of unemployment of the youth in Balochistan. It was revealed from observations and interviews during the fieldwork that modern TVET skills for manufacturing different versions/types of small boats and related industries are not taught in the TVET framework either by provincial TVET departments or national TVET under the NVQF that could fulfil the skill needs of this industry. The provision of TVET skills required by the small boat-making industry may provide employment opportunities for the unemployed youth of Balochistan (FGD 1 & 3, 2021; Personal Communication, 2021). There is a strong need for making small boat-making TVET skills in vocational, technical, and specific categories a part of human resource development and skill-based HR policies to ensure job creation and employment opportunities in small boat-making industrial set-ups of SEZs/EPZs of Balochistan.

Table 39: Deficiency of Formal TVET Skills for Boat Making Industry

SEZ/EPZ	Potential Industry	Units of Factory	No. of Vocational Skills	No. of Technical Skills
Bostan SEZ	-	-	-	-
Gwadar EPZ	Small boat making	22	6 out of 15 = 40% (60% Deficiency)	7 out of 20 = 35% (65% Deficiency)
Hub SEZ	-	-	-	-

Source: Field survey and FGDs conducted by the authors.

Table 40: Deficiency in Formal Common/Specific Skills in the Boat-Making Industry

SEZ/EPZ	Potential Industry	Units of Factory	No. of Common Skills	No. of Specific Skills
Bostan SEZ	-	-	-	-
Gwadar EPZ	Small boat making	22	11 out of 23 = 48% (52% Deficiency)	13 out of 58 = 35% (65% Deficiency)
Hub SEZ	-	-	-	-

Source: Field survey and FGDs conducted by the authors.

Skill Mapping for the Fisheries/Olive oil industry

The results and discussion of skills mapping for the fisheries/olive oil industry, selected from among the category of selected three potential industries, are given below.

Table 41: Total Number of TVET Skills for the Fisheries/Olive oil Industry

SEZ/EPZ	Potential Industry	Units of Factory	No. of Vocational Skills	No. of Technical Skills	Total No. of Skills
Bostan SEZ	-	-	-	-	-
Gwadar EPZ	Fisheries/Olive-oil	5+0 = 5	15	30	45
Hub SEZ	Fisheries/Olive-oil	7+2 = 9	15	30	45

Source: LIEDA, 2021; I&CD, 2021; District Profile s Lasbela/Gwadar, 2021; Field survey and FGDs conducted by the authors.

Table 42: Total Number of Common/Specific Skills for Fisheries/Olive-oil Industries

SEZ/EPZ	Potential Industry	Units of Factory	No. of Common Skills	No. of Specific Skills	Total No. of Skills
Bostan SEZ		-	-	-	-
Gwadar EPZ	Fisheries/Olive-oil	5	18	39	57
Hub SEZ	Fisheries/Olive-oil	9	18	39	57

Source: LIEDA, 2021; I&CD, 2021; District Profiles Lasbela/Gwadar, 2021; Field survey and FGDs conducted by the authors

TVET Skills for the Fisheries/Olive oil industry: TVET skills necessary for production in the fisheries/olive oil industry are given in the form of four categories, i.e., vocational skills, technical skills, common skills, and specific skills.

Vocational skills: fishing position experts, fish feeds experts, fishing record keepers, distant water surveyors, geographic coordinators, fishing estimate data entry operators, fishing data enumerators, Monitoring/control/surveillance, fishing logbook coverage, e-logbook experts, vessel information system analysts, olive technical assistance, olive tree cultivators, olive tree irrigation experts, and olive oil storage managers (Table 41).

Technical skills: cultured fish experts, fish taxonomy experts, fish ecologists, fish breeding skills, fish diseases laboratory experts, lakes and reservoirs engineers, waste managers, fisheries technicians, harbour managers, harbour warehouse keepers, harbour/fish preservers, fish distributors, ichthyology, freshwater biology, fish physiology, fish culture, fish breeding, fish diseases, freshwater culture engineering, vessel monitoring systems, satellite-based vessel monitoring system (VMS), olive tree pesticide experts, olive oil extract mechanists, olive oil chemists, olive oil centrifuge experts, olive oil business managers, olive oil botanists, traditional malaxation experts, olive oil crushing personnel, and olive oil filtration mechanics (Table 41).

Common skills: Financiers, managers, business dealers, cultivators, common labours, olive field workers, packages and storekeepers, olive oil industry managers, computer operators, harbour managers, harbour warehouse keepers, harbour/fish preservers, fish distributors, fisheries entrepreneurial skills, fish diseases, freshwater fish capture, fishing data enumerators, and aquatic products value chain experts (Table 42).

Specific skills: cultured fish experts, fish taxonomy expert, fish ecologists, fish breeding skills, fish diseases laboratory experts, lakes and reservoirs engineers, waster waste managers, fisheries technicians, aquatic products value chain experts, ichthyology, freshwater biology, fish physiology, fish culture in ponds and in large water bodies, fish breeding, fish culture engineering, vessel monitoring systems, satellite-based vessel monitoring system (VMS), Monitoring/control/surveillance, fishing logbook coverage, e-logbook experts, vessel information system analysts, fishing position experts, fishing record keepers, distant water surveyors, geographic coordinator, fishing estimate data entry operators, olive technical assistance, olive tree cultivators, olive tree irrigation experts, olive tree pesticide experts, olive oil extract mechanists, olive oil chemists, olive oil centrifuge experts, olive oil business managers, olive oil botanists, traditional malaxation experts, olive oil crushing personnel, olive oil storage managers, and olive oil filtration mechanics (Table 42).

Estimated number of job creation in fisheries/olive-oil extraction industry: according to the estimates, an average of two to three skilled labours is necessary to work in a functional fishery and/or olive oil extraction unit in Gwadar, Winder, and Hub areas of Balochistan. There were a total of 14 (5+9) fisheries/olive oil extraction units working in areas near the SEZs of Gwadar and Hub (Tables, 41 & 42; Field Survey, 2021; I&CD, 2021;

Fisheries Department, 2021; Agriculture Department, 2021; Personal Communication, 2021). The estimates of available jobs in a functional fisheries/olive oil extraction unit were 90 (=45x2) and 114 (=57x2) for vocational/technical and common/specific skill categories, respectively. Since there are approximately 14 fisheries/olive-oil extraction units in Hub and Gwadar industrial areas (Field Survey, 2021), the total number of employment opportunities and available jobs respectively for vocational/technical and common/specific categories of the skilled labour force was 1,260 (= 90x14) and 1,596 (114x14), created by 14 fisheries/olive-oil extraction units in the province (authors' calculation, 2021). The field survey observations and FGDs showed that most of the jobs were advanced in vocational, technical, and specific skills. However, more jobs can be created if the fisheries/olive oil extraction skills are imparted via the TVET system in specific categories required for this industry in Balochistan (FGD 1-2-3, 2021; Field Survey, 2021; I&CD, 2021; GIEDA, 2021).

The estimates of potential job creation in the fisheries/olive oil extraction industry depend upon the potential number of fisheries/olive oil extraction units to be installed around the sea areas and olive oil extraction fields. The results of the study show approximately 150 fisheries units and 100 olive oil extraction units (FGDs 1 & 2; Field Survey, 2021). Thus, the estimates of potential job creation by the fisheries and olive oil extraction industry were 13,500 (90x150) and 17,100 (114x150) (authors' calculations, 2021). However, the job creation potential of this sector depends upon many factors including the provision of relevant TVET skills, laws for the development of fisheries/olive oil extraction industries, opportunities for local industrialists through concessions by the Board of Investment, and access to the local fishermen to the skills demands of fisheries/olive-oil extraction industry (authors' calculations, 2021; C&SID, 2021).

Mapping Deficiency of Formal TVET Skills for the Fisheries/Olive oil industry: The provincial TVET system provides both technical and vocational skills relevant to the fisheries/olive oil extraction industry in Balochistan but on a limited scale. The deficiencies in vocational and technical skills for this industry are reported at 60% and 63%, respectively (Table 43). Deficiencies in common and specific skills requirements for the fisheries/olive oil extraction industry were reported at 44.5 and 72%, respectively in the context of TVET skill provision by the provincial TVET institutes in Balochistan (Table 44). The provision of TVET skills required by the fisheries/olive oil extraction industry can ensure employment for the unemployed youth of Balochistan (FGD 1, 2021; Personal Communication, 2021). The TVET-related policy options should include the provision of TVET skills as per the skill demands of the fisheries/olive oil extraction industry at an extensive level, which will create jobs for the unemployed youth in potential industrial set-ups of SEZs/EPZs in Balochistan.

Table 43: Deficiency in Formal TVET Skills for the Fisheries/Olive oil Industry

SEZ/EPZ	Potential Industry	Units of Factory	No. of Vocational Skills	No. of Technical Skills
Bostan SEZ		-	--	-
Gwadar EPZ	fisheries/olive-oil	14	6 out of 15 = 40% (60% Deficiency)	11 out of 30 = 37% (63% Deficiency)
Hub SEZ	fisheries/olive-oil	14	6 out of 15 = 40% (60% Deficiency)	11 out of 30 = 37% (63% Deficiency)

Source: Field Survey and FGDs conducted by the authors.

Table 44: Deficiency in Formal Common/Specific Skills for the Fisheries/Olive oil Industry

SEZ/EPZ	Proposed Industry	Units of Factory	No. of Common Skills	No. of Specific Skills
Bostan SEZ	-	-	-	-
Gwadar EPZ	Fisheries/olive-oil	14	10 out of 18 = 55.5% (44.5% Deficiency)	11 out of 39 = 28% (72% Deficiency)
Hub SEZ	Fisheries/olive-oil	14	10 out of 18 = 55.5% (44.5% Deficiency)	11 out of 39 = 28% (72% Deficiency)

Source: Field Survey and FGDs conducted by the authors

National vocational qualification framework and TVET skills for SEZs/EPZs

The document of the National Vocational Qualification Framework (NVQF) has framed a total of eight levels of TVET skill qualifications and expertise with a consensus of relevant TVET stakeholders. These levels are segmented into three broader categories, i.e., level 1 to level 4, level 5, and level 6 to level 8. The first two levels (i.e., level 1 to level 5) are termed National Vocation Certificates and National Vocational Diplomas and these levels (1 to 5) are considered the TVET sector to ensure skilled-based employment opportunities. The last category of level 6 to level 8 is considered the higher education sector of TVET in Pakistan. Levels 1 to 5 will be the mandate of TVET institutes and levels 6 to 8 will be the mandate of universities across Pakistan (NAVTTC, 2017; NVQF, 2020; Khan & Ahmed, 2019).

The TVET skill mapping for selected nine industries in three selected SEZs/EPZs consists of all the skills/trades levels of NVQF but further segregation specific to each level is not mapped in this study. The mentioned limitation of level-wise TVET mapping according to vocational, technical, common and specific skills related to each of the nine industries analysed in this study may give further insights into TVET skill mapping for human resource planning/development. However, it is beyond the scope of this study. Nevertheless, we have identified the limitation so that further studies may be conducted in this emerging area to fill the gap of TVET level-wise segregations for TVET-based human resource development and planning.

Similarly, there are 122 TVET skills that are designed under the standards of NVQF and most of the skills are related to common skills identified for the above nine industries in the SEZs/EPZs in Balochistan. There is little attention given to NVQF skill lists that could fulfil the three remaining categories of skill lists mapped for existing, proposed, and potential industries that are likely to be established in the SEZs/EPZs of Bostan, Hub, and Gwadar under the CPEC projects in Balochistan (NSIS, 2018, NVQF, 2020; GIZ, 2021; Ahmed et al, 2018).

Ahmed and Khan (2019) did a SWOT analysis of associate engineering diplomas of Balochistan and indicated a lot of skill deficiency with respect to the context of standards of NVQF (2020) and emphasised skill mapping and identification of relevant skills for fulfilling the labour market demands of industrial set-ups in Balochistan. Similarly, skill-related studies by Khilji (2016), Ahmed (2020) and Ahmed, Shakeel and Khan (2021) have also identified TVET areas of interventions for investment in providing relevant skills that are covered under the NVQF (2020) and its list of standardised skills of different levels in the context of demand-driven skills for all the provinces of Pakistan.

Traces of TVET-based job creation in Labour Force Survey

The Labour Force Survey (2018-19) indicates that national youth with a population of around 180 million (below 30 years of age group) will enter the labour force by the end of 2030 and only 3% are professionally trained to

work in different sectors of Pakistan's economy. The small number of the vocationally and technically skilled labour force is not likely to meet the emerging demands of industrial and manufacturing sectors with the right and relevant kinds of skills (LFS, 2018-19; Afza et al, 2020; Andlib & Khan, 2018).

The Labour Force Survey 2018-19 contains data collected from 43,361 families from all four provinces of Pakistan. Among the employed, 31,799 were paid employees, 28,075 were self-employed, 1,120 were employers, and 17,409 were contributing family helpers. For Balochistan, we got a sample of 6,494 employed youth, out of which 3,326 were paid employees and 3,164 were self-employed workers. The irony is that only 187 were employed based on their TVET skills in different industrial set-ups in Quetta and Hub industrial zones. The TVET skill employment was only 2.88% at the provincial level in Balochistan (LFS, 2018-19; Afza et al, 2020; Andlib et al, 2020; Table 45; Andlib & Khan, 2018).

The LFS (2018-19) also indicated that 8 out of 1,000 were reported as self-employees and 79 out of 1000, from a sample of 6,494 employed youth, were reported as paid employed in the industrial and manufacturing sector of the province. The situation of TVET-based employment shows a limited number of relevant skills, deficiencies in TVET skills, and very low levels of industrial existence in the province.

Table 45: Comparison of Employment Status by Pakistan & Balochistan

Employment Status	Pakistan		Balo chistan	
	Million	Percentage	Million	Percentage
Paid employed	26.17	42.41	0.99	39.62
Self-employed	21.47	34.80	0.98	39.17
Employers	0.84	1.37	0.05	1.96
Unpaid family workers	13.22	21.43	0.48	19.25
Total	61.71	100	2.5	100
TVET based employment	-	-	-	2.88

Source: Authors' calculations from LFS (2018-19)

CONCLUSION

This study elaborated and mapped the institutional framework of the TVET system of Balochistan in. The structures of both the public and private sector TVET systems were mapped. The skill provision through public TVET institutes was highlighted. The TVET institutional framework of the public sector TVET institutes is inadequate for the provision of TVET skills required by different trades to meet the industrial needs of SEZs/EPZs to materialise employable opportunities for provincial youth and the labour force. The capacity of private TVET institutes is limited to some specific skills and does not focus on the labour market requirements of the provincial industries. The NSIS statistics for skills development also verify the skill deficiencies and inadequate levels of TVET skills for human resource development in the province.

The study mapped thousands of vocational, technical, common and specific skills for the selected nine industries from among the categories of existing, proposed and potential industrial set-ups to be established in the three SEZs/EPZs of Bostan, Hub and Gwadar in Balochistan. Four types of TVET skills were listed for each of the nine selected industries for this study. These supply and demand for listed skills were then tabulated and estimated in numbers and percentages for the selected industries for SEZs/EPZs of Balochistan. The study also estimated the potential of job creation and employment opportunities for each selected industry that showed the extent and nature of job creation for decent work and adequate livelihood earnings for the provincial youth. Lastly, the study

estimated the percentage of TVET skills that are not provided by the provincial TVET system (i.e., the study estimated skill deficiencies) for skill development of the labour force to meet the labour market needs of the selected nine industries in SEZs/EPZs of Balochistan. The TVET skill mapping for industrial development has policy implications for devising proper human resource planning for SEZs/EPZs to ensure job creation for the unemployed youth of Balochistan.

5. POLICY IMPLICATIONS

The mapping of TVET skills is required to fulfil the labour market needs of the existing, proposed, and potential industries in SEZs/EPZs under the CPEC project for Balochistan. The following policy options are recommended for skill mapping and HR planning in light of the results and discussion of this study to ensure job creation for the unemployed youth of Balochistan.

- A well-coordinated and comprehensive TVET framework should be devised to include all the supply-side and demand-driven aspects of skill formation for industrial development in SEZs/EPZs of Balochistan.

- The Government of Balochistan must seriously work on an emergency basis for human resource development relevant to the industrial HR needs of SEZs/EPZs to ensure the labour market needs of the industries in SEZs/EPZs of Balochistan.

- There must be capacity-building approaches in any industry-specific policy, and skill development programmes should focus on human capital formation for fulfilling the slogan of "skilling the unskilled labour force" of the province.

- There is a strong need for coordination and alignment of B-TEVTA with allied provincial TVET departments that should work collectively for reducing the existing skill deficiencies of the provincial labour force.

- The recognition and functionality of B-TEVTA as per the B-TEVTA Act of 2011 should be mandated for regulation, execution, and skill development in the province.
  The recommendations of the National Skill Strategy (2015) should be implemented to enhance the capacity building of the provincial TVET system to start relevant skill provisions for the youth of Balochistan.

- The study calls for a comprehensive coordinated model of B-TEVTA, NAVTTC, ILO, UNESCO and other public and private TVET institutes to devise a comprehensive TVET policy for the province of Balochistan.

- The linkages between TVET institutes and industries are strongly recommended to fill the skill gaps to ensure employable opportunities for the provincial labour force.

- TVET skill deficiency is serious a problem for unemployment in the province and to solve it, the government is recommended to invest in enlarging the supply of TVET skills that are relevant to the existing, proposed and potential industries of SEZs/EPZs of Balochistan.

- Industry-specific skills for each industry must be planned with TVET and SEZs/EPZs stakeholders by establishing industry-specific skill centres of excellence in SEZs/EPZs in Bostan, Hub, and Gwadar.

- The "Prime Minister Skilling Pakistan Program" and "Chinses Assistance for Technical and Vocational Skills Development" must contain "Skill Provision for the Industrial Needs of SEZs/EPZs" to ensure job creation for the unemployed youth of Balochistan.

- The study finally recommends human resource planning based on TVET skills required by the industries of SEZs/EPZs to ensure job creation, decent work, and livelihood for the unemployed youth in the industrial setups of SEZs/EPZs of Balochistan.

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APPENDIX - A

Details of Mixed Research Methodology

It constituted of two surveys, i.e., desktop and field surveys, with different phases and skill mapping exercises for the collection of data and information necessary for accomplishing the objectives of this study. The details are given below for following mixed research methods to conduct different components and their phases both simultaneously and sequentially for this study as suggested for the mixed method studies by Ercikan and Roth (2006), Sandelowski, (2017), and following the research methods identified by Gonzalez-Velosa and Rucci (2016). The mixed research methods adopted in this study were a combination of qualitative and quantitative data acquisition and its multiple phases were undertaken both simultaneously and sequentially. The results were discussed in detail for understanding the complete diaspora of skill mapping from anticipating skill demands, skill supplies, mapping the TVET system of Balochistan, providing lists of vocational, technical, common and specific skills for each of the nine select industries, the estimations of the availability of skills-based jobs in each industry, TVET skills deficiencies for labour force requirement by each industry, the estimations of potential job creation by each industry, and to put forward recommendations for skill-based HR planning for skill development of the labour force for industrial set-ups of SEZs/EPZs in Balochistan

Desktop Survey: It contained a systematic review of literature relevant to TVET systems, skill mapping, SEZs/EPZs, industrial set-ups of Balochistan, human resource development, and job creation. The systematic review covered selected research articles, official reports, periodicals, online SEZ-related materials, books on human resource development and job creation, and research methodology for giving context and proper insight to conduct the second component of the research methodology (field visits). The systematic literature review for this study covered the following set of available literature.

- Selected literature review of TVET skills, industrial set-ups, SEZs/EPZs
- TVET policy documents
- National Vocational Qualification Framework
- Skilling Pakistan literature and data
- Balochistan-TEVTA
- NAVTTC reports/studies
- GIZ TVET Sector Support Programme for Pakistan
- Balochistan Economic Report (Asian Development Bank, 2005)
- Pakistan Vision 2025
- National Vocational Qualifications Framework (NVQF)

Field Survey Components: Field survey components were divided into three phases and their sub-phases for the remaining parts of skill mapping and explained as under;

Phase-1: Phase 1 of the field survey contained meetings with TVET authorities, TVET and SEZs/EPZs stakeholders, field visits and results of field visits to meet TVET and relevant KIs for skill mapping exercises. The details are given below.

Meetings with Authorities of Related TVET Departments (Skill mapping exercise#1): In the first phase multiple visits were paid to related TVET departments where meetings were held with the authorities for discussions on the subject matter, the scope of work, and to obtain their consent to continue the study further. This phase updated the researchers of the study about existing human resource development and planning in the context of SEZs/EPZs and their overall industry in Balochistan. Identifying HODs, key informants (KIs) and subject matter experts related to job creation and skill formation policy for different industries proposed for SEZs/EPZs were research outputs in this phase of the field survey. Official meetings were sought out with authorities/members of the Chairman Gwadar Port Authority, Chinese Facilitator of Gwadar Free Trade Zone, members of the chambers of commerce, officials of LIEDA, GIEDA, BSEZ, HSEZ, authorities of TVET allied departments of GoB, GIZ provincial coordinators, members of the Board of Investment, B-TEVTA working for

human resource development, NAVTTC, Commerce & Industries department, provincial-based chamber of commerce and industry, Labour and Manpower department at the provincial level, and including some other institutions as well. Meetings were arranged for getting TVET information and data collection via brainstorming interviews, official meetings, informal discussions and getting their permission letters for the next phases of three FGDs, multiple field surveys/visits and feedback responses.

Phase # 2: *Visits to Three SEZs/EPZs in Bostan, Gawadar and Hub (Skills mapping exercise#2):* Multiple visits to the sites of industries located in three SEZs/EPZs were undertaken to know the development statuses of these zones for industrial development with the consent letters obtained in phase one of the field survey. Visits also included meetings with HoDs of these authorities and identification of potential employers to install proposed industries on these SEZs/EPZs in Balochistan.

Sector-wise Identification of Relevant TVET Skills (Skills mapping exercise#3): Designing and identifying industries for existing, proposed, and potential industries of SEZs/EPZs in Balochistan. The identification of skills and human capital requirements was undertaken for the identified industries to be installed in selected SEZs/EPZs. The outcome of this TVET identification was for industry-wise human resource planning for job creation for unemployed youth of Balochistan.

Highlighting Industrial Sector-wise Job Opportunities (Skills mapping exercise#4): The estimations of available jobs created by each selected industry of this study were covered in this phase of the study. Job creation prospects and job opportunities in nine existing, proposed and potential industries of SEZs and EPZs of Balochistan in three FGDs and field visits were undertaken/highlighted in skill mapping exercise 4. The outcome of this exercise-4 helped bring about the set of industry-wise economic and employment opportunities that are expected to be started for job creation in selected SEZs and EPZs of the province.

TVET lists of ILO, UNEVOC and NAVTTC (skills mapping exercise#5): The skills lists of ILO studies of occupational segregation and coding as per the expertise and levels of different skills were taken into consideration for skill mapping of the selected nine industries for this study. The UNEVOC studies give guidance and directions for skill mapping and its identifications that are confined and limited to the selected nine industries of this study. The NAVTTC skills list of its 122 NVQF and its competency-based skills trades in both technical and vocational areas were also tallied with skill mapping for different industries of this study. The TVET skill dissemination in vocational, technical, common and specific skills was also taken into consideration for skill mapping and human resource planning for industries of three SEZs/EPZs located in different geographic locations of Balochistan.

Human Resource Planning & Recommendation thereof in Perspective of Proposed Industries Selected SEZs/EPZs (Skills mapping exercise-Final): Complete documentation was composed in this phase of research design for job creation and human resource planning for the proposed industrial set-ups of SEZs/EPZs of Bostan, Hub and Gawdar of Balochistan. Human resource planning and addressing the job creation potential in line with the macro objectives set for Pakistan in Vision-2025 and CPEC projects for the socio-economic development of Balochistan were undertaken in this phase. Recommendations for human resources planning for skill-based human resource development of the provincial youth labour for available and prospective employment opportunities and jobs creations were documented as HR planning policy options in the context of the above-mentioned phases of data collection for skill mapping and human resource planning for the selected SEZs and EPZs of the province.

Data Collection & Its Tools: As suggested for mixed method studies by Ercikan and Roth (2006), Sandelowski, (2017) and following the research methods identified by Gonzalez-Velosa and Rucci (2016) for a combination of qualitative and quantitative data about discussing methods of anticipating skills demand, the data collection sources for this study were multiple and comprised desktop survey, field survey, three FGDs, multiple visits to industrial sites of SEZs and EPZs, informal interviews and discussions with key informants, including employers, field survey/visits to TVET ministries/departments/commissions/authorities, office of the chambers of Commerce of selected SEZs/EPZs, selected districts administrative offices/directorates, Gwadar Deepsea Port

Authority, Gwadar Port Operation & Free Trade Zone, GIEDA, LIEDA, Quetta Industrial Estate, Gadani Shipbreaking Yard, technical universities of Balochistan, representatives of the Board of Investment, provincial GIZ official, TVET experts, NAVTTC, B-TEVTA, HoDs of TVET institutes, TVET qualified labours, representatives of fishermen, and many more stakeholders of the TVET sector of Balochistan.

Two sets of questionnaires: One set of questionnaires was designed/opted for employers and the other for key informants to get data on TVET skill demands for the proposed industries and their occupations for all the three SEZs and EPZs selected for this study. The questionnaire was designed based on the contents of five research objectives and questions of this study and all the queries of FGDs were made in line with NAVTTC research studies and NVQF (2020) (Feldstein, 2015; NAVTTC, 2017 & 2020; Ahmed, 2019). The second questionnaire was designed to get relevant TVET skills for skill mapping in the four categories of vocational, technical, common, and specific skills. It contained a self-assessment of demanded TVET skills in these categories and their identification by the industrial human resource offices, record keepers, and employed key informants in selected nine industries. The enumerators were given training for conducting the fieldwork, FGDs, and other aspects of data collection as per the research ethics and conduct of this study and allowed to get relevant data after the consent of all the TVET stakeholders and relevant respondents of this study. The ethical guidelines mentioned by Williams (2007) and Wilson (2008) were incorporated in this study.

Technique/Approach for Policy Formulation: Both the qualitative and quantitative components of analyses (Mixed Method Methods) and assessment (based on acquired data, facts and information) were used for the concerned topic of this study. Qualitative analysis or assessment was accomplished through descriptive analysis to document skills mapping and human resource planning for TVET skills mapping to bring forth the supply and required human resources for nine industries selected each three from exiting, proposed and potential industries of SEZs and EPZs selected for this study. Quantitative analysis dealt via suitable statistical analysis and meaningful tabulations were given to complement the descriptive discussion and analyse skill mapping and HR planning in the context of this study (Ahmed, 2019, Khan & Ahmed, 2019, Ahmed et al, 2018; Ercikan and Roth, 2006; CEDEFOP, 2008; ILO, 2019; UNEVOC, 2016; NAVTTC, 2019; Sandelowski, 2017; Wolf, 2011).

APPENDIX - B

Description of Three Selected SEZs/EPZs of Balochistan (Literature Review, Informal Interviews, Field Visits & FGDs)

Three SEZs/EPZs of Balochistan were selected for skill mapping and human resource planning to ensure job creation and provide employment opportunities to the unemployed youth of the province. The details are as follows.

Bostan Special Economic Zone: Bostan Special Economic Zone (BSEZ) is a 200 sq km designated area under the establishment of Industrial Estate Bostan, that is on 1000 sq km of area, executed by the Industries and Commerce Department (I&CD), the Government of Balochistan. The scope of development work includes networking of basic physical infrastructure and facilities, such as boundary wall construction, road networks of 9.3 KMs, street light installation, sewerage and water distribution network, administrative blocks, mosqueS, telecommunication network, and providing security for the staff of BSEZ. However, basic inputs and infrastructure for the provision of gas, electricity, grid-station, and construction of warehouses are yet to be developed.

For industrial development, there are 222 plots, out of which 209 are for industries and 13 for commercial activities under the notification issued by the Board of Investment (BoI) on 5th May 2020.

The official key informants (KIs) from I&CD reveal that there is yet no mechanism developed by the Small Industries Wing of the I&CD to provide TVET skills for the proposed industries in BSEZ in Pishin. The other TVET allied departments of GoB, NAVTTC, and B-TEVTA have no coordination to design and suggest TVET skills for prospective jobs that will be created once the industries start functioning and producing goods and services in BSEZ.

Hub Special Economic Zone, Lasbela: Hub Special Economic Zone (HSEZ) is located in the Lasbela district of Balochistan. It has a total area of 406 acres. 284 acres are for industrial set-ups and 284 acres are for remaining activities including commercial, electrification, offices, sewerage and water provisions, and other types of physical infrastructure.

The proposed industries are textile, pharmaceutical, cement manufacturing, food & confectionary industries, chemical industries, plastic, paper manufacturing, printing & packaging, ceramics, marble processing, and mineral grinding. This very important mega SEZ project for Balochistan is under the Lasbela Industrial Estates Development Authority (LIEDA).

The KIs and officials of both LIEDA and I&CD of Balochistan told during field visits that as yet no development programme has been started on the proposed and allocated area for HSEZ. It will take another 10 years for physical infrastructural development and for industries to start producing goods and services.

Regarding the relevant TVET skill availability for the proposed industries of HSEZ, the KIs revealed that no such mechanism is developed by provincial or federal TVET skills supply organisations for human capital formation and skill development of the local youth in HSEZ.

Gwadar Port Operation and Development of Free Zone: The Chinese Embassy documents reveal information about Gwadar Port Operation and Development of Free Zone (GPODFZ), "*According to the concession agreement signed among China Overseas Ports Holding Company (COPHC), Gwadar Port Authority (GPA) and Singapore Port Authority in 2013, the development and operation of Gwadar free zone was handed over to COPHC. Gwadar free zone is located in the northern part of Gwadar, about 7km away from the existing port. The planned development period is from 2015 to 2030 and is divided into four phases. The free zone includes the northern area (898 hectares) and the initial area (25 hectares), equalling 923 hectares*".

The current developmental progress of GPODFZ includes the construction of its physical infrastructure of building, structure, water supply and drainage, electrical, control, high-voltage alternating current (HVAC), foundation treatment, and traffic engineering has already been completed. The field levelling and foundation treatments are under development and by 2030 they will be completed. The business centre and Linyani Trade Exhibition Halls of GPODFZ are completed and business and cargo activities are made functional for investors and traders. The fishery processing centre is also completed for fisheries industry development in Gwadar. The Hebei Bishu Group stainless steel plant will be developed in near future. The starting designs for the projects such as the MID-TRANS company edible oil squeezing project are underway and many more projects, MoUs among stakeholders, businesses licenses, and many more business ventures related to trades are yet to be started under the game-changing Gwadar Deep-sea Port project of the CPEC for regional development and transnational connectivity.

Gwadar Technical and Vocational Training Centre: China has also established the Gwadar Technical and Vocational Training Centre for the provision of TVET skills to the local youth of Gwadar and adjacent districts. The Chinese Zhongbao, Chairman of China Overseas Port Holding Company, in brainstorming discussion during the field visit researcher told that the TVET set-up of Pakistan cannot viably provide TVET skills in different trades to meet the needs of the local skilled labour force. As per the mandate of the Gwadar TVET Centre, the Chinese and GPODFZ authorities are not responsible to start and provide skills to the youth of Balochistan. The solutions might range from public-private partnerships, private investment in TVET provision as per the Chinese model of skill development, heavy investment in public sector TVET institutes, and prioritising the TVET system for human resource development by both the provincial and federal governments of Pakistan.

Infrastructure Development for Free Zone & Export Processing Zones (EPZsG), Gwadar: In In Gwadar, which is the central point of CPEC in Pakistan, three very strategic and important, from the point of view of trade and international business, CPEC projects are launched for the socioeconomic development of Balochistan. These are aimed at making Gwadar Deep-sea Port the future economic hub for regional and Central Asian countries for their transnational shipments of energy, goods, and services. These projects are earmarked for the purpose of Gwadar

port free zone having approximately an allocated area of 2,280 acres, Gwadar Industrial Estate Development Authority (GIEDA) as an industrial zone constituting 3,000 acres of land and Export Processing Zone (EPZ) approximately occupying 1,000 acres of land for the industrial development and export processing facilities to the industrial shipments of goods and services via Gwadar Deep-sea Port to the world.

The GIEDA officials and some KIs told that Gwadar is the least developed region in terms of human resources and TVET skills.

The TVET departments including I&CD, the education department, SWD, NAVTTC, and many local NGOs were found to be providing just conventional TVET skills that are least relevant to the proposed services and industries for Gwadar Port Authority, EPZs, GPODFZ, industries of GIEDA and Gwadar Development Authority. The following industries as warehouses small size industries, medium size industries, noise & pollution-intensive industries, cement industries, manufacturing industries, textile industries, food industries, and petrochemical industries are proposed for Gwadar and its SEZs/EPZs.

According to a GIED official, Nadeem Khoso, "There is a dire need of mapping and identification of TVET skills for human resource development for creating jobs for the unemployed youth of Gwadar and coastal areas of Balochistan."

Bostan Special Economic Zone: Bostan Special Economic Zone is developed as a part of Industrial Estate Bostan, located in Bostan, Tehsil Karezat of district Pishin. The industrial estate, including Bostan Special Economic Zone (BSEZ), is one of the mega CPEC projects that has a very significant economic and investment role in overall CPEC projects in Balochistan. It is approved by the relevant stakeholders including federal ministries, the Board of Investment, the provincial government, relevant provincial departments, Chinese stakeholders, and provincial and federal chambers of commerce. This industrial zone is allocated 1000 acres of land in sub-tehsil Bostan, Tehsil Karezat Khanozai Kakar, district Pishin. It is located on main Highway-50 and is almost 30 KMs from both the Quetta International Airport and Quetta Dry Port. The developed area is reported to be around 200 acres and the contractor is assigned to develop this industrial zone in the stipulated time. The Federal Public Sector Development Programme (PSDP-2017/18) has allocated around PKR 519.6 million for the establishment of Bostan Industrial Estate Phase-I. Funds for other phases are yet to be allocated. The types of industries to be established in the estate, in the first phase, are fruit processing, agriculture machinery, pharmaceutical, motorbikes assembly, chromite, cooking oil, ceramic industries, ice and cold storage, electric appliances, and the halal food industry in the Bostan Industrial Zone for local and foreign investors (Khan & Ahmed, 2018; Saira & Abbas, 2018; Khan & Anwar, 2016, Planning Commission, 2017).

PART II

SOCIAL SECTOR DEVELOPMENT
Policy Briefs

IMPROVING PUBLIC SECTOR DEVELOPMENT PROGRAMME ALLOCATIONS IN CLIENTELISTIC ENVIRONMENT OF BALOCHISTAN: A POLITICAL ECONOMY ANALYSIS

Mir Sadaat Baloch and Nadir Khan

INTRODUCTION

This policy brief is about the Public Sector Development Programme (PSDP) in Balochistan. The province has always been on the development agenda of every political party but, sadly, we have not witnessed any meaningful development in the region. The growth rate of the region is the lowest in Pakistan. After the 7th NFC awards and 18th Amendment in 2010, the people of Balochistan anticipated an era of sustainable development but this fiscal autonomy has proven a zero-sum game. The PSDP is considered a key component in improving the socio-economic outlook of an area. However, successive governments have failed to streamline it despite repeated directions from the High Court and Supreme Court to plan it effectively. During 2017 and 2018 no new development projects were undertaken as the matter was sub judice. Even in the following years, the PSDP was challenged in the Balochistan High Court and the Supreme Court of Pakistan as the opposition claimed that allocative efficiency and distributive justice were very low. Finally, the opposition with the help of the ruling party changed the incumbent chief minister in Balochistan as he was not addressing their clientelistic demands. The province is experiencing a clientelistic environment that is affecting the overall development of the area.

Considering the events of the last five years it is imperative to find ways to improve the process of PSDP allocations. Ideally, the allocation in PSDP should be based on a prioritisation exercise keeping in view the challenges in the province. However, in Balochistan financial allocations are mostly done based on what could be best described as an incremental approach: a certain fraction is added to

the department's previous years' allocation every year without a rigorous investigation of the departmental needs and impact of previous allocations.

Scope

The policy brief is focused to formulate a mathematical model and develop a matrix for only four departments, that are, health, education, social welfare and communication & works in the province of Balochistan for improved PSDP allocations.

Based on the study title "Improving Public Sector Development Programme Allocations In Clientelistic Environment Of Balochistan: A Political Economy Analysis," this policy brief suggests better methods and tools for the improvement of PSPD allocations in Balochistan.

METHODOLOGY

The analysis is based on secondary data obtained from the provincial planning and development department on education, health, social welfare, and communication and works. The data on PSDP projects in Balochistan from 2011 to 2021 was obtained. The sample for the study was composed of 10 districts of Balochistan selected using the multiple poverty index (MPI). Development projects in four departments, namely, education, health, social welfare, and communication and works were analysed to find out inequalities in PSDP allocations. Table 1 shows the top 5 districts having the lowest MPI values and the bottom 5 districts having the highest MPI values.

Table 1: Sample of the study

Top 5 Districts		
S. No.	*District*	*MPI*
1.	Quetta	0.213
2.	Kalat	0.275
3.	Khuzdar	0.285
4.	Gwadar	0.293
5.	Mastung	0.302
Bottom 5 Districts		
S. No.	*District*	*MPI*
1.	Killa Abdullah	0.641
2.	Harnai	0.633
3.	Barkhan	0.627
4.	Ziarat	0.575
5.	Chagai	0.546

Source: Multidimensional Poverty in Pakistan 2014-15

Quetta district had the lowest MPI depicting the lowest poverty and the district of Killa Abdullah had the highest MPI depicting the highest poverty among the districts of Balochistan.

Mathematical Model

Furthermore, a model was developed by using population and area as the constructs for the allocation of development funds. The weights for population and area were estimated and incorporated into the following model to calculate the estimated funds for each district:

$$R_i = P_T \times (W_{Pi} + W_{Ai}) \quad \text{----------------------} \quad (1)$$

Equation 1 shows the allocation of resources to a particular district. The allocated resources of a district are a function of its population and area and the total PSDP. After estimating the funds for each district, the allocation of funds to each department was calculated by using the following method:

$$R_{Dj} = R_j \times \frac{\sum R_j}{years} \quad \text{------------------} \quad (2)$$

According to Equation 2, the resources to be allocated to each department are a function of the weighted average of the resources allocated previously and the resources allocated to the district.

The MCDA Performance Matrix

The matrix for this study is based on the multi-criteria decision analysis (MCDA). In MCDA, the preferences of the stakeholders determine the criteria for project selection. The weights given to each criterion are subjective and are dependent on the availability and fulfilment of the criterion.

The projects to be approved in the PSDP were scored on each criterion. The score of each criterion was then estimated as a part of the total weight given to that criterion. The total preference score was calculated using the following mathematical equation:

$$S_T = w_1 s_{i1} + w_2 s_{i2} + \ldots + w_n s_{in} = \sum_{j=1}^{n} w_j s_{ij} \ldots\ldots(3)$$

KEY FINDINGS

The analysis shows the disbursement of PSDP in communication and works, education, health, and social welfare departments in 10 districts during the

last 10 years, i.e., 2011 to 2021. Table 2 further shows that some districts with more population and area received fewer funds as compared to less populated and smaller districts. Currently, the Government of

Balochistan has no proper model or matrix to allocate the development budget to the districts or even to the departments in an efficient manner.

Table 2 Comparative Analysis of the Disbursement of PSDP in the 10 Districts

Districts	Population	Area (sq. km)	Communication & Works	Education	Health	Social Welfare
Quetta	2,269,473	3,447	19%	15%	17%	32%
Khuzdar	798,896	14,958	5%	4%	7%	2%
Killa Abdullah	758,354	4,894	4%	3%	3%	2%
Kalat	412,058	8,416	2%	1%	1%	1%
Mastung	265,676	3,308	1%	2%	1%	1%
Gwadar	262,253	12,637	4%	2%	5%	1%
Chagai	226,517	44,748	2%	1%	1%	0.5%
Barkhan	171,025	3,514	1%	1%	0.5%	0%
Ziarat	160,095	3,301	1%	0.5%	1%	1%
Harnai	97,052	2,492	2%	1%	0.5%	1%

Application of performance matrix

The matrix is developed to rank the public sector development projects. The criteria used in the matrix to rank the projects are the themes obtained from the interviews and focus group discussions with the personnel of relevant departments. Each project is given a score on a scale of 0–100 for each criterion. The score of each criterion given to a project is taken as a product with the assigned weight of that criterion. The final score for each project is calculated using Equation 3 above. The following Table 3 illustrates how the health department can prioritise different projects for a given year.

Table 3 Project Decision Matrix for Health Department

Project Name	District MPI Rank	District's Previous PSDP Funds	Infrastructure for Project	Project Prerequisites	Project Risks	Score
P1	10	10	100	100	100	46
P2	20	70	100	100	100	67
P3	90	60	66	100	50	77
P4	100	30	66	0	50	51
P5	80	80	33	100	0	71
Weights	*30*	*30*	*10*	*20*	*10*	

POLICY RECOMMENDATIONS

To overcome problems with PSDP allocations in Balochistan, this policy brief proposes recommendations based on the premise that not considering the population and area statistics leads to

inefficient allocation of resources. We propose a matrix that helps in the prioritisation of scarce resources reasonably and transparently.

The findings show that the allocations should be made without any bias and influence as such

influence and biases would turn some districts stronger and others weaker. Furthermore, the Government of Balochistan should include each district's local government body to know their need and responsibilities. This policy brief further suggests that a single approach to budgeting would make it difficult for the government. Budget decisions are getting progressively difficult, especially during times of reduced public sector budget and austerity as the people of Balochistan are demanding more public services. In recent times the public has had minimal trust in the political process as they are experiencing limited engagement in such decisions. In such times the government can gain public trust by involving them in the process. Along with engaging the public, the government needs to ensure that the whole process of PSDP is improved. The Government of Balochistan needs to ensure transparency by providing information about decisions taken in the process. Moreover, the government needs to set rigorous accountability procedures.

PUBLIC-PRIVATE PARTNERSHIPS IN EDUCATION: EVALUATING THE EDUCATION MANAGEMENT ORGANIZATIONS PROGRAM IN SINDH, PAKISTAN

Gul Muhammad Rind and Dhani Bux Shah

INTRODUCTION

Public-private partnerships (PPPs) in education are a global phenomenon and are being framed as a best practice to achieve educational goals of access, quality, and equity. PPPs emerged in Sindh and Pakistan when the UN set the goal of Education for All (EFA) and later revised Sustainable Development Goals 4 to Ensure Inclusive and Equitable Quality Education by 2030 (UNDP, 2015). In Sindh, the World Bank, the United Kingdom's Department for International Development (DFID), United Nations Agency for International Development (USAID), and Asian Development Bank (ADB) have supported PPP models of foundation schools and Education Management Organizations (EMOs). In 2015, the Government of Sindh launched the EMOs programme with the World Bank, the ADB, and USAID's support to ensure educational accessibility and equity (LaRocque & Sipahimalani-Rao, 2019).

PPP supporters (see LaRocque & Sipahimalani-Rao, 2019; Patrinos et al., 2015) consider PPPs in education to be the best option to reduce government bureaucratic inefficiencies and increase school-based management and accountability to achieve educational goals. However, the sceptics of the market model, including PPPs (see Khamsi & Draxler, 2018; Verger, 2012), argue that these policies are mainly framed at the global north and promoted through international organisations (IOs) and development partners, which create power asymmetries between donors and recipient governments. Furthermore, applying the market values such as choice and competition in education through PPPs increases inequality and narrows the purpose of education

through standardised testing.

METHODOLOGY

We chose the realist evaluation approach (Pawson and Tilley 1997) as a conceptual framework. We aimed to answer the research questions of what extent, how, in what way, and for whom the PPP mode of education through EMOs improves the access to education and ensures quality and equity education in Pakistan. We developed a theory of change based on the concept of New Public Management in Education, which enabled us to see the causal relationship between a given input and the expected outcome through the underlying mechanism. Our data collection was based on a mixed-methods strategy, which included relevant policy document analysis, the use of secondary data collected from SEMIS[1], PSLM[2], schools monitoring reports, and semi-structured interviews with stakeholders, including key informants from donors, the SELD PPP node, school operators, teachers, and parents.

KEY FINDINGS

PPP Governance Mechanism in Sindh: Advantages and Contextual Challenges

This study found that the understanding and objective of PPPs-EMOs are perceived differently at different stakeholders' levels. At the SELD level, it is considered a more technical arrangement between the public and private sectors, where the government can get services from the private sector and encourage donors and philanthropist organisations to support the government. Meanwhile, donors such

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[1] PSLM = Pakistan Social Living standard measurement survey

[2] SEMIS = Sindh School Education Management Information System

as the World Bank and the ADB frame it as a broader context, unlike PPPs in infrastructure. It is based on public choice and new public management concepts, where the state's role is limited to financing. The PPP-EMOs understanding at the district and school levels are not fully translated. Stakeholders such as parents, teachers, and school operators do not fully understand the concept of PPPs. Spillane (2006) stated that policy at the top level, designed and not adequately translated through administrative support and training, often gets distorted and misunderstood. Due to donor-driven policies and the involvement of the private sector, including NGOs, the EMOs are not fully owned by local administrators and teachers, which poses challenges to school operators to get policies implemented with existing government teachers and staff.

The PPP-EMOs model has a somewhat clearer policy and competitive bidding process than foundation schools. EMOs selection is based on technical and financial proposals evaluation, which has been carefully designed. Key performance indicators (KPIs) of EMOs enable the environment of accountability, and independent educational experts and auditors evaluate the KPIs and ensure financial transparency. EMOs have legal certainty, institutional arrangement, fairness, and transparency.

There are also some other challenging aspects of this model. Though it incentivises the private sector, it did not bring any private sector investment in education. It has also been reported that in the PPP policy board of EMOs, many non-educator consultants are working for education and intense bureaucracy at the government level, which contradicts the objectives of innovation. The school contracts also lack incentive mechanisms for bringing innovation. Selecting schools based on competitive bidding allows many low-performing EMOs as the lowest bidder to enter the system, compromising quality and equity. Our study found that PPP schools did not bring any innovation to make them superior to government schools in solving complex education issues. Further competition among schools also creates an environment of manipulation and promotes the narrow vision of education in the form of standardized tests. The government needs to put a constraint on competition and promote collaboration among schools through cluster-based schooling. The poor governance of public schools in Sindh gives

comparative advantages to PPP schools. The reasons are not simple but embedded in the social and political structure of the country. In the government sector, many primary schools were established without any consideration but based on political motivations to appease constituents. In addition, over-centralisation, discretionary funding, a hectic bureaucratic process in procurement, and a poor and lengthy process to hire teachers contribute to inefficiency. PPPs have a relative advantage as partners' performance has been aligned with educational quality and access, and there is a specific monitoring system that ensures accountability. In PPPs, teachers who do not show up can be fired easily. We found the administrative process in EMO schools

was quick and easy to hire teachers, implement teachers' professional development, and get together with the community. However, the notion of efficiency based on the market approach adds low-qualified and untrained teachers to the system. Having low salaries and loose regulations of EMOs creates a myriad of issues in retaining the best teachers.

Access and Equity in Education

Currently, 91% of schools in Sindh are primary, which is being reported as a major cause of drop-outs; PPP-EMO focuses more on post-primary education. It was hoped that current PPPs through EMOs could help build and increase access and ensure proper schooling requirements. It has been reported that PPP schools are more attractive to girls. Parents feel more secure sending their girls there as more female teachers are recruited, which also wins parents' trust. As the EMO model of PPP shows some achievement in increasing access, the more considerable impact is still far behind.

The impact of education reform cannot be viewed in fragmentation. As SELD (2017) claimed, PPP- EMOs will largely address bringing out-of-school children to increase post-primary enrollment in selected districts. Based on our data analysis from SEMIS data of Sindh and PSLM surveys of these selected districts, the EMO model so far could not address the larger goal of educational access issue. Tables 1 and 2 below highlight the picture of EMOs districts before and after EMOs interventions.

Table 1: Schools Monitoring Report of Selected Districts before EMOs Intervention 2014-15

Districts	Student enrollment		Total enrollment gender-wise			Primary completion rate			STR[3]	OSC[4]
	Primary+ pre -primary	Post - primary	Boys	Girls	Total	Boys	Girls	Total		
Khairpur	222 ,377	88 ,530	192 ,119	118 ,784	310 ,903	61	47	54	34	55
Sukkur	110 ,690	43 ,348	95 ,092	58 ,946	154 ,038	53	38	46	30	47
Larkana	154 ,196	101 ,730	128 ,924	90 ,002	218 ,926	73	60	67	31	50
Kamber - Shahdadkot	129 ,848	42 ,121	105 ,785	66 ,184	171 ,969	60	49	55	31	71
Dadu	189 ,381	48 ,299	140 ,520	97 ,160	237 ,680	68	61	65	35	42

Table 2: Schools Monitoring Report of Selected Districts after EMOs Intervention 2019-20

Districts	Student enrollment		Total enrollment gender-wise			Primary completion rate			STR	OSC
	Primary+pre -primary	Post - primary	Boys	Girls	Total	Boys	Girls	Total		
Khairpur	258 ,258	92 ,353	217 ,215	133 ,396	350 ,616	49	25	38	39	48
Sukkur	135 ,585	50 ,654	112 ,273	73 ,966	186 ,239	99	68	85	41	48
Larkana	192 ,352	73 ,623	152 ,861	113 ,114	265 ,975	54	42	48	38	56
Kamber - Shahdadkot	148 ,549	50 ,402	119 ,194	79 ,757	198 ,951	51	35	44	39	46
Dadu	173 ,952	58 ,201	141 ,682	90 ,471	232 ,153	69	54	62	38	40

Sources: Authors' compilation based on SEMIS Sindh and PSLM survey 2014-15 to 2019-20 data

We also found that PPP-EMOs had limitations to increasing access because this model is quite costly, and their number of schools is relatively low. In EMOs, a school can accommodate a certain number of students. Furthermore, parents also pull out kids from other schools and admit them to EMOs. The PPP model lacks a special mechanism or design to increase the enrollment of kids from disadvantaged and hard areas. Due to the nature of the PPP model, i.e., being more market-centric, it incentivises operators to select and promote more able-bodied and so-called talented students who can perform better on tests.

Quality Education

Though PPP schools offer some level of better quality due to accountability, it has also created a huge difference in quality based on different management of schools. Some PPP schools perform extraordinarily well,

while others relatively poorly. This difference is because some organisations have comparative advantages in operating schools. Lubienski (2003) cautioned that differentiation in schooling and competition would bring more segregation and inequality.

A significant indicator to gauge quality is the annual assessment based on large-scale examinations and standardised tests. This is a more outcome-based approach to ensure and assess the quality of education. Educational standards and assessments are also complex and are not properly understood by the stakeholders (i.e., teachers, parents, and administrators). In some EMO schools, kids have different levels based on their past educational history and huge disruption in schooling. It is challenging to ensure better quality education and teaching-learning without addressing their learning deficiencies through remedial education and continuous support from the government and EMOs.

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[3] STR refers to the student-teacher ratio, calculated based on the number of students per teacher

[4] OSC refers to the rate of out of school children at the age of (4-16), as per the given data PSLM survey (2014-15) and (2019-20)

Compared to government schools, PPP schools have better governance and management, which reduce students' and teachers' absence. On the other hand, PPP schools' teachers are not well-qualified, are low-paid, and cannot teach advanced courses adequately. The Student Achievement Test (SAT) Sindh results also shows no significant differences between EMOs and government schools. Figures (1and 2) show no significant differences in the achievement of EMOs and government schools of the same region.

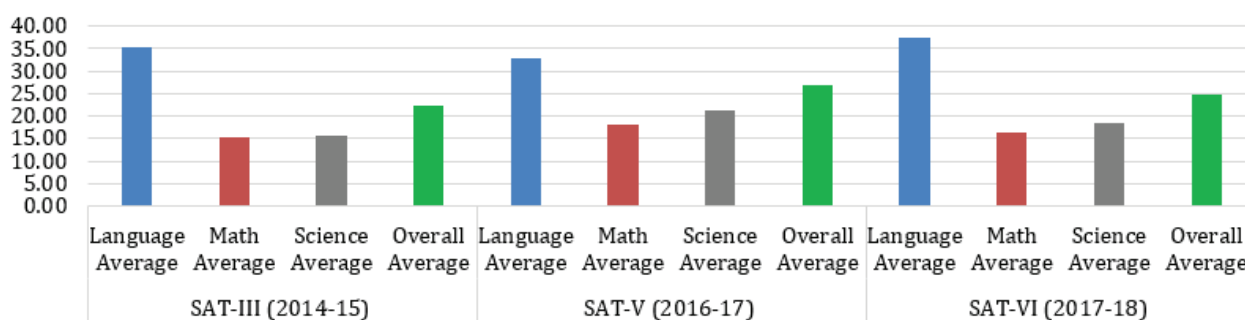*Figure 1: SAT Results of EMO Schools in Selected Districts*
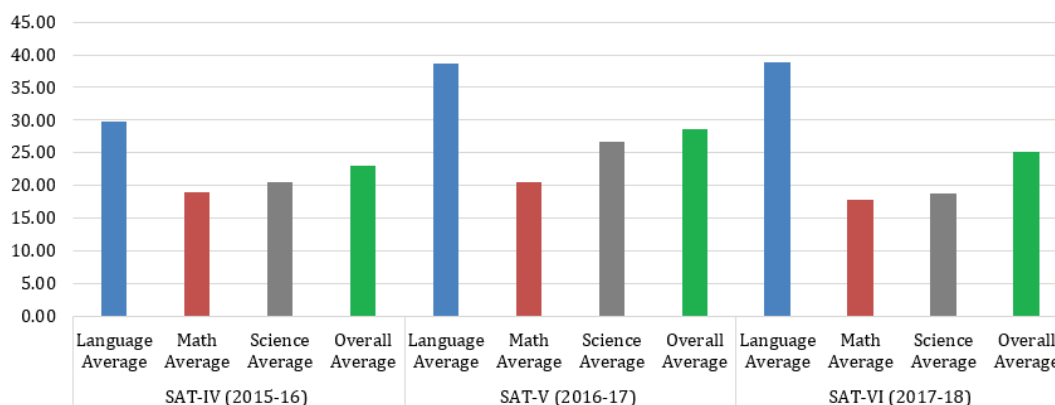
Figure 2: SAT result of Non-EMO Schools in Selected Districts [5]

Source: Authors' compilation based on the analysis of SAT Sindh results

Sustainability of PPP-EMOs in Sindh

EMO schools are under contracts of 10 years to private organisations. Many EMO operators and other stakeholders considered it an interventionist approach. They showed concern that schools will struggle to survive once EMOs are pulled out, as government bureaucracy and administration processes are outdated and corrupt. The sustainability of PPPs can be retained if these schools' financing is guaranteed. There should be a financial endowment with proper shape. Also, there should be a board of governance based on local experts and school staff, and they should be continually trained. Once EMOs pull out, the school itself can run and pay teachers and staff from the endowment along with continuous government and community support.

POLICY IMPLICATIONS

We found neither PPPs entirely efficient and effective nor failures, and they can be evaluated based on their merit. Also, they are not a panacea, which does not warrant the government's withdrawal from responsibilities. Following are some policy recommendations for education reforms, including PPPs.

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[5] Selection criteria of non-EMO schools in SAT analysis were based on nearby non-EMO (government) schools in the same union council or tehsil

Different PPPs should be under one Umbrella/System.

In Sindh, there are various models of PPPs operating and increasing. However, two major forms of PPPs (foundation schools and EMOs) exist in the K-12 education system. It is recommended that all PPPs be brought under one system to increase synergy and reduce inequitable funding and regulations of schools. This approach also reduces segregation and stratification of schools, students, and teachers. The best possible way to get collaboration among schools is through a cluster-owned system, where nearby schools could be managed by a hub school irrespective of their provision (either public or private).

Right Design of PPP Policies

The ultimate effect of PPP depends on policy design and regulations, which ensure access, quality, and equity. The opening of schools should be based on socio-economic conditions, where more incentives and subsidies are to be allocated to the area where socio-economic conditions have deteriorated. Targeted vouchers or subsidies are recommended, incentivising teachers' and girls' participation in disadvantaged areas.

Education Accountability and Regulations

Education accountability should be more input-based rather than outcome-oriented, based on standardized assessment. Also, there should be a minimum criterion for a policy for teacher and staff recruitment, their qualifications, and the payment process. There should be more democratic accountability and governance of schools where the role of parents should be alleviated.

AN IMPACT EVALUATION OF GOVERNMENT SCHOLARSHIPS ON STUDENTS SUCCESS: A CASE STUDY OF UNIVERSITY OF TURBAT

Riaz Ahmed, Adeel Ahmed
and Waseem Barkat

INTRODUCTION

In a global context, the significance of scholarships is profoundly acknowledged across all levels of education. Specifically, in 2015 it gained more importance when the United Nation Sustainable Development Goals (SDGs) emphasised the inclusion of scholarship programmes as a tool for achieving its goals. Research has also identified scholarships as a significant instrument for a nation's development and growth. In this connection, under SDGs Goal 4, 'ensure inclusive and equitable quality education and promote lifelong learning opportunities for all,' some global targets were set by representatives of the global education community, including ensuring equal access to affordable and quality higher education to all genders, persons with disabilities, and indigenous peoples (targets 4.3-4.5) (UNESCO Institute for Statistics (UIS), 2019).

The situation of higher education in Pakistan is not adequate compared to its neighbouring countries. The chance of getting higher education for people in Pakistan is only 4%, which is much lower than in India and China where the chances of getting higher education are 11% and 20%, respectively (Nasreen & Afzal, 2020). One of the major reasons for this poor condition of higher education in Pakistan is low government spending on education. The government spending on education during the last two decades remained only around 2% of GDP (Ali, Hakim, & Abdullah, 2016). Though it increased to 2.9 per cent in 2017 (Hunter, 2020), it was much lower than the target of 4 per cent of the GDP. The government further reduced the expenditure on education from Rs. 868 billion (2018-19) to Rs. 611 billion (2019-20), which is almost a 30 per cent reduction in education expenditure (see Figure 1).

Figure 1: Expenditure on Education

Source: Economic Survey of Pakistan (various issues)

The study, on which the present policy brief is based, examined the short- to the medium-term impact of government-sponsored scholarships on undergrad students' academic performance and other success outcomes by taking the University of Turbat as a case study. Using Astin's Input-Environment-Outcome (I-E-O) Model (Astin, 1991) in which the outcomes of higher education are conditioned to inputs and environment, this study took financial aids to students as another input in students' academic success (see Figure 2). The students perform academically better than others in a university if they get government financial support because such students do fewer part-time jobs and concentrate more on their academic activities. In the study, academic success included academic achievement as well as other success outcomes, such as the acquisition of skills and competencies, the attainment of learning objectives, persistence, retention, and career success.

This study found a positive impact of the need-based scholarship on male students' success outcomes, including academic achievement, retention, engagement and satisfaction, acquisition of skills and competencies, and career success. However, we did not find any evidence of the impact of merit-based scholarships on students' academic performances.

Figure 2: Conceptual Framework for Impact of Financial Aids on Students' Academic Success
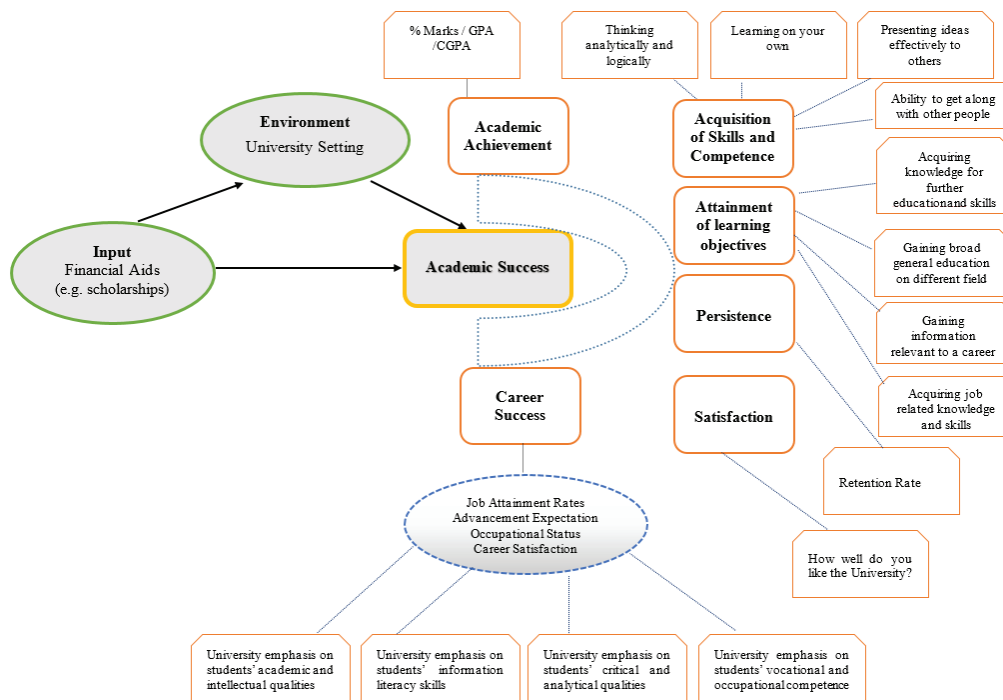
Source: Author's Conception based on York et al. (2015) and Pace and Kuh (1998).

METHODOLOGY

The study tried to investigate the short- to medium-term impact of government-sponsored scholarships on undergraduate students' academic performance and other success outcomes. We took advantage of recent initiatives by the Government of Pakistan at both federal and provincial levels of several undergraduate scholarship programmes, which provided us with a quasi-natural experimental research design. The study utilised the difference-in-differences (DID) approach to estimate the impact of scholarships on students' academic and success outcomes. Using the University of Turbat (UoT) as a case study, we compared academic performance outcomes — percentage marks, GPA, or CGPA — of students who held scholarships with academic performance outcomes of those in the same sessions, departments, and degree programs without having scholarships before, during and after the awards.

The study used a wide range of secondary quantitative data (e.g., students' academic performance measured by students' marks in percentage, GPA, and CGPA; students' retention rates;

and students' percentage marks in matric and intermediate levels) along with data from a self-monitored survey conducted at the UoT.

In addition to that, the scope was extended to the areas of need assessment, programme monitoring and process evaluation, budget constraints, barriers to implementation, delays in payments, knowledge and information dissemination, data recording, maintaining and updating, etc. These factors were considered because institutional context such as institutional failure in managing the process of scholarship can distort the overall discussion of the governance issue. The required data for this analysis were extracted from key informant interviews (KIIs), focused group discussions (FGDs), and policy documents from five public sector universities of Balochistan (UOT, UOB, BUITEMS, SBKWU, and UOL) as well as from the scholarship monitoring bodies, i.e.,

the Higher Education Commission of Pakistan (HEC) and Balochistan Educational Endowment Fund (BEEF).

FINDINGS

The results show that need-based scholarship programmes are far better instruments for targeting and educating the underprivileged population of Pakistan. For instance, the HEC Ehsaas scholarship program — targeted at needy students — increases the academic performance of male students with a percentage point of 4.10 in their semesters' marks (see Table 1). This significant improvement in semester results is important for students because an increase of 4.10 per cent marks. on average, may help them to retain their enrolment during their degree program or it may change their grades (e.g., from B to B+).

Table 1: Impact of Government Scholarships on Students' Academic Performance

Outcome Variables: Semester Marks (in per cent)	(1)	(2)	(3)	(4)	(5)	(6)
	Need-Based Scholarship (Ehsaas Program)			Merit-Based Scholarship (BEEF Programs)		
	Total	Male	Female	Total	Male	Female
Scholarship Holders	2.43**	1.21	4.52**	9.39***	10.31***	9.18***
	(1.17)	(1.31)	(2.26)	(0.90)	(1.21)	(1.26)
Post-Scholarship Semester	4.41**	3.01	8.75***	4.27***	3.37**	6.61**
	(1.86)	(1.96)	(3.17)	(1.51)	(1.69)	(2.61)
Scholarship Holders x Post Scholarship Semester	3.10**	4.10***	-2.58	-0.75	-1.58	-0.13
	(1.39)	(1.55)	(2.51)	(1.47)	(1.86)	(1.98)

Note: Observations comprise students enrolled in session 2017-20 (5th to 8th semesters) and session 2018- 21 (3rd to 8th semesters). Controls include parents' education, intermediate and matric marks in percentages, and district, semester, and program fixed effects. Robust standard errors are in parentheses.
* p<0.1, ** p<0.05, *** p<0.01. Models estimated by OLS.
Data Source: Authors' calculations based on the UoT result gazettes, awardee lists, and authors' survey at UoT.

The study also traced out some potential channels through which need-based scholarship programmes have an impact on male students' academic performance. Such students who get scholarships are less likely to depend on their parental income for

university-related expenses than female students. Also, they are more likely to focus on their studies seriously by taking class notes compared to their counterpart male students who do not hold any scholarships (see Table 2).

Table 2: Possible Channels of scholarship that improve male students' academic performance

Outcome Variables	Parents meet students' University expenses (Value = 1, and 0 otherwise)	Students Took Detailed class notes during class (never, occasionally, often, very often)
Scholarship holders	-0.14*** (0.05)	-.031 (0.23)
Male	-0.13*** (0.04)	-1.10*** (0.20)

Note: Observations comprise students enrolled in sessions 2018-21 to 2021-24. Robust standard errors are in parentheses. $p<0.1$, ** $p<0.05$, *** $p<0.01$. Model (1) is linear regression; Model (2) is an ordered logistic regression.*

Data Source: Authors' calculations based on the UoT result gazettes, awardee lists, and authors' survey data.

The recipients of scholarships spend much of their stipend amounts on those materials (e.g., books, gadgets, online courses etc.) that are necessary for attaining higher education. There is evidence that students also spend their stipend amount on other things such as their siblings' education or the purchase of capital goods.[For instance, a student in an FGD told us that with the scholarship stipend he bought a rickshaw on instalments, which he operates part time and earns a handsome amount that supplements his family income.[1]

Using survey data, also observed a positive impact of scholarships on students' others success outcomes (e.g., students' retention, engagement and satisfaction, acquisition of skills and competencies, and career success). However, this study did not find any evidence of the impact of merit-based scholarships on students' academic performances. Nevertheless, merit-based scholarships have other benefits, such as creating a competitive environment for learning in the class).

POLICY RECOMMENDATIONS

In light of the study's findings, the following are some policy recommendations:

Need-based scholarship programmes require greater government attention: Government scholarship programmes have a very comprehensive and well-defined set of objectives. The findings of this paper suggest that the need-based scholarship programmes are better-designed and contribute toward achieving the programme's objectives to a

greater extent. Particularly, the HEC Ehsaas programme supported poor families in meeting the university-related expenses of their sons. Such financial support reduced the burden of male students who previously had to work for financing their education. On the other hand, the BEEF scholarship program, which is mainly merit-based, provided incentives to those students who already had better academic records due to their better socio-economic conditions and family status. Given the scarce resources and socio-economic conditions of Balochistan, the need-based scholarship programmes are providing greater benefits than merit-based scholarship programmes because the former target students of the underprivileged regions of Balochistan for accessing higher education. Therefore, we recommend that need-based scholarship programmes should be given priority.

Continuation of scholarship programs: Government and policymakers should learn the lesson from the discontinuation of the Prime Minister Fee Reimbursement Programme (PMFRP) in universities of Balochistan that severely affected their master's degree programmes; a drastic reduction in the enrolment of master's degree programmes in almost all universities of Balochistan was observed after the closure of the programme. Therefore, if the ongoing HEC Ehsaas scholarship programme (the main scholarship programme for undergrad students at the national level) provides financial aid to students of the underprivileged regions of Pakistan is discontinued after the incumbent government's departure, just like the PMFRP, the impact on undergraduate education could be disastrous across the country. Therefore, the Government of Pakistan should find means to

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[1] For instance, a student in an FGD told us that with the scholarship stipend he bought a rickshaw on instalments, which he operates part time and earns a handsome amount that supplements his family income.

continue the HEC Ehsaas scholarship programs, particularly in the underprivileged regions of Pakistan.

Improvement in the programme's design: Though the objectives of the programmes (HEC need-based and BEEF merit-based programmes) are well defined, a revision in their policies should better target the underserved/deprived population of Balochistan. Though need assessment is one of the best criteria of HEC's Ehsaas scholarship programme for targeting the population who need government support and found it difficult to continue their higher education otherwise, the threshold of Rs.45,000 family income is unreasonable for its initial eligibility criteria. Given the demographic structure of the rural population (i.e., joint family structure is common with large family size and few earning hands), we suggest per capita family income (income of the family/number of a family member) could be a better threshold for its initial eligibility criteria. On the other hand, due to its inclusion criteria, the BEEF scholarship programme captures those students who mostly belong to well-off families because of their strong academic records and having education-related facilities at home. Therefore, without a revision in its policy, the BEEF programme would not be able to support needy students in accessing higher education. Nevertheless, its financial model is more sustainable than the HEC Ehsaas programme's model. The BEEF invests its endowment funds that not only provides scholarships to student from its proceedings of the invested fund but also covers its operational and other costs. Overall, we suggest that a better scholarship programme design for targeting the students in the underprivileged regions of Balochistan could be the one that combines the inclusion criteria of the HEC Ehsaas Scholarship programme, including the above-mentioned modification, with the self-sustainable financial model of the BEEF programme.

Conduct experimental research: The results of this study may be generalisable to other universities in Pakistan with similar characteristics to the UoT, such as similar location, and less diversified students (ethnic, language, socio-economic conditions). Since the HEC Ehsaas scholarship programme is a national level programme which has been operating in 135 universities and 87 campuses of degree awarding institutes, it may be possible to conduct experimental research for teasing out the causal impact of the scholarship on students' success.

SKILLS MAPPING AND HUMAN RESOURCE PLANNING FOR PROPOSED SPECIAL ECONOMIC ZONES: JOB CREATION FOR UNEMPLOYED YOUTH OF BALOCHISTAN

Aziz Ahmed and Syed Munawar Shah

INTRODUCTION

The socioeconomic indicators of Balochistan are not promising for enhancing its industrial and economic development, which is one of the objectives of establishing special economic zones (SEZs) and export processing zones (EPZs). The provincial youth are also comparatively less skilful to exploit prospective opportunities for jobs, decent work, and adequate livelihood earnings once industrial activities start in SEZs/EPZs in the province. The provincial and national vocational and technical skills provision systems have not yet identified relevant technical and vocational education and training (TVET) in different demand-driven trades/skills for human resource development of the unskilled provincial labour force. The deficiencies of different technical and vocational skills required for the existing and proposed industrial set-ups may likely cause more socioeconomic deprivations, persistent poverty, low earnings, and increasing unemployment among the provincial youth in years to come.

The study on which this policy viewpoint is based mapped skills required for nine industries that are planned to be established in three proposed SEZs/EPZs of Bostan Special Economic Zone, Hub Industrial Development Zone and Gwadar Export Processing Zones under the China-Pakistan Economic Corridor (CPEC). The study mapped relevant TVET skills into four categories, i.e., vocational, technical, common, and specific skills required in industrial set-ups of Bostan, Hub, and Gwadar industrial zones. The devising of TVET skills-based human resource planning is likely to create jobs for the unemployed youth of Balochistan in both the rural and urban labour markets.

This study is based on mixed research methods. The components of the mixed research method included field surveys, focus group discussions, visits to industrial SEZs/EPZs and their labour markets, informal interviews, and secondary sources of data.

METHODOLOGY

This study was aimed at skills mapping and human resource planning for industrial set-ups in SEZs/EPZs in Balochistan. The research design of this study included all the stakeholders involved in TVET and skills mapping based to comprehensively and multidimensionally study every aspect of human resource planning for industrial set-ups in

KEY FINDINGS

The study mapped the provincial TVET system, analysed public and private sector TVET provision mechanisms, compared Balochistan's TVET system with other provinces, and studied TVET provision deficiencies in different skills that are relevant to skills-based human resource planning for SEZs/EPZs of Balochistan. The study attempted to map skills into vocational, technical, common and specific skills required/demanded for each of the three types of existing, proposed and potential industries in Balochistan. The study was confined to mapping TVET skills and human resource planning that are required in nine industries in three SEZs/EPZs of Balochistan.

Vocational skills: Vocational skills are those skills that apply to a practical profession or work required by the industries selected for this study. The duration of vocational training is from three months to twenty-four months regularly imparted by TVET

allied departments in Balochistan (I&CD, 2021; NAVTTC, 2021; B-TEVTA, 2021; SWD, 2021; UNESCO-UNEVOC, 2017; ILO, 2001).

Technical skills: Technical skills are those skills applied to a technical profession or work required by the industries selected for this study. The technical training is from three months to five years of degree programmes regularly offered by TVET institutes, polytechnic colleges, and engineering/agriculture universities of Balochistan (I&CD, 2021; NAVTTC, 2021; B-TEVTA, 2021; H&TED, 2021; UNESCO-UNEVOC, 2017; ILO, 2001).

Common skills: Common skills are those skills that apply to generic HR and work requirements of the industries selected for this study. These types of jobs are neither part of the vocational nor technical skills

required for specific industries chosen for this study (UNESCO-UNEVOC, 2017; ILO, 2001).

Specific skills: The category of specific skills is a subset of the total number of both technical and vocational skills that apply to a profession and/or a technical job required by the industries selected for this study (UNESCO-UNEVOC, 2017; ILO, 2001).

For mapping TVET skills in the above four categories, the study identified nine categories of industries. The list of existing industries included snuff/tobacco, seafood, and shipbreaking. The list of proposed industries included food processing, steel/iron, and marble/mineral grinding units. The list of potential industries included chromite processing, small boat making, and fisheries/olive-oil extracting units in Bostan, Gwadar, and Hub SEZs/EPSz (Table 1).

Table 1: Selection of Industries for Skills Mapping

SEZ/EPZ	Existing Industry	Proposed Industry	Potential Industry
Bostan SEZ	Snuff/tobacco factory	Food processing	Chromite
Gwadar EPZ	Seafood	Steel and iron producing industry	Small boat making
Hub SEZ	Shipbreaking	Marble & mineral grinding	Fisheries and olive oil extraction

Source: I&CD, 2021; LIEDA, 2021; GIEDA, 2021; profiles of three districts, 2021; field survey and FGDs conducted by the author

The study mapped in detail the TVET skills for each of the above nine industries in vocational, technical, common and specific categories to identify relevant skills for human resource development for the development of SEZs/EPZs to ensure job creation for the unemployed youth of Balochistan. The mapping of vocational, technical, common and specific skills required for each of the nine industries was done to identify to highlight both the demand and supply of TVET skills for industrial set-ups of SEZs/EPZs to ensure job creation for prospective employment of the unemployed youth of Balochistan. There is a potential for millions of jobs and employment opportunities in these nine industries for the skills identified in this study. However, the study also reveals many grey areas including skill deficiencies, inadequate skill provision, huge demand-supply skill gaps, outdated trades that do not meet industrial labour market demands, and the persistence of low

human capital needed for the existing, proposed, and potential industries of Balochistan.

POLICY RECOMMENDATIONS

The analysis of the study suggests extensive investment in those technical and vocational skills that are required for provincial industrial set-ups of human resource planning to ensure job creation for the unemployed youth of Balochistan. Specifically, the following policy recommendations are given for TVET skills-based human resource planning for imparting skills to the unemployed bulge of provincial youth.

- The demand-driven TVET skill programmes must be started for skills provision through provincial and national TVET systems for human resource development of the provincial youth.

- For devising any skills policy programmes, the inputs of industrial human resource departments must be consulted, and programmes must be designed in collaboration with industries for a skills provision system in Balochistan.

- The linkages among labour markets, industry, TVET institutes, TVET allied departments, national/provincial TVET commissions/authorities, and TVET qualified individuals are recommended for skills mapping to ensure job creation in provincial industrial set-ups of Balochistan.

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